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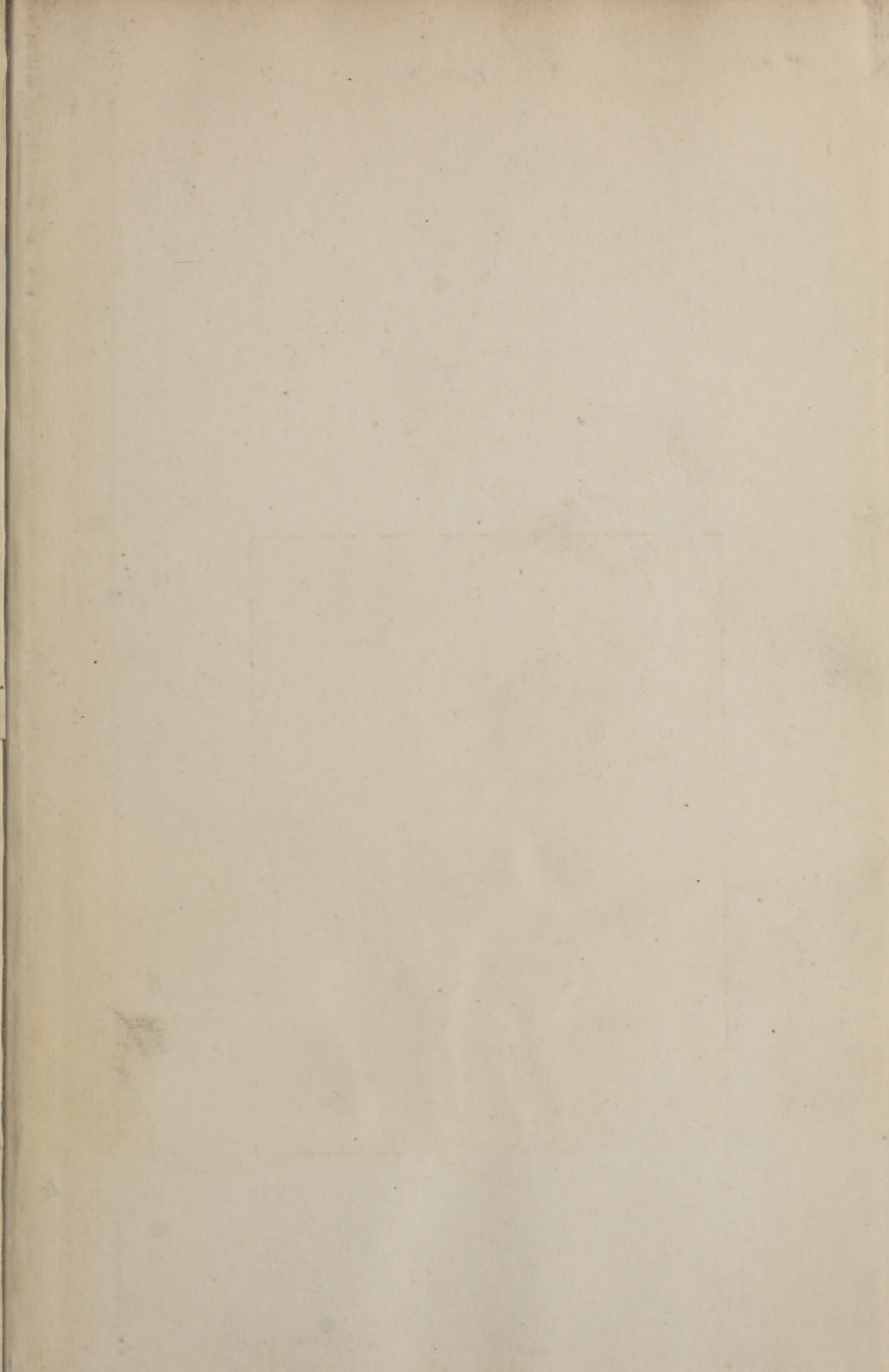
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THE OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

Dental Schools Abroad.

BY H. L. AMBLER, M.D., D.D.S., CLEVELAND, OHIO.

THE Edinburgh Dental Hospital (or college as we would term it) was founded in 1892, has sixty-four students, and is located on Chambers street, and considered a public charity, but has to pay poor and burgh rates, and an income tax; the town council gives them five hundred dollars yearly to purchase dental appliances for technical education. They took the occasion of Queen Victoria's diamond jubilee, to circulate a subscription paper which netted them three hundred and fifty dollars.

Out of eight hundred and six patients, to whom anesthetics were administered for extraction, two hundred and ninety were given chloroform.

Other hospitals are located, viz: Newcastle Dental Hospital; Liverpool Dental Hospital; Birmingham Dental Hospital; Plymouth Dental Hospital; Exeter Dental Hospital; Victoria Dental Hospital, Manchester; Bristol Royal Infirmary Dental Department; Dental Hospital and School of Ireland (Dublin). The latter, with the Royal College of Surgeons Ireland, grants a diploma in dental surgery. For the final examination, each professor asks five questions.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

The Dental Hospital of London (Leicester Square) of which we present three views: one of the waiting room with the lady secretary at her desk, and the chief clinician for the day standing near; on the wall is a large board painted black, on which appear the names and amounts of money donated by each person; this is a permanent arrangement, and when new donors appear, their names are added to the list. Other views show exterior of building, and amphitheatre. The hospital is supported by voluntary contributions, and when patients receive an appointment card, a portion reads viz: "Patients are reminded that boxes are placed in the Hall and Surgery for contributions towards the support of the Hospital."

This hospital was founded in 1858 and is open daily, Sundays excepted, and at the outside door is an iron box (with a slot) on which the inscription reads, "Dental Hospital of London Donations." Thus the charitably inclined passer-by does not lack for opportunity to give.



WAITING ROOM, DENTAL HOSPITAL, LONDON

Adjoining the hospital is a vacant lot on which there is a **very**

large sign which reads about viz: The Dental Hospital is in need of two hundred thousand dollars and therefore solicits that amount to erect a new building, contributions can be handed to the secretary.

It is a very common thing to solicit money for dental hospitals and colleges, and nobody takes offence, as it has always been the custom, and we find many ladies among the contributors. In case of the above hospital, a wealthy lady has promised to almost donate the lot referred to, which in that part of the "World's Metropolis" is worth a small fortune. In some cases bequests are made in wills; in others donations are given outright; in others there are annual subscribers, both among the profession and laity.



DENTAL HOSPITAL, LONDON, ENG.

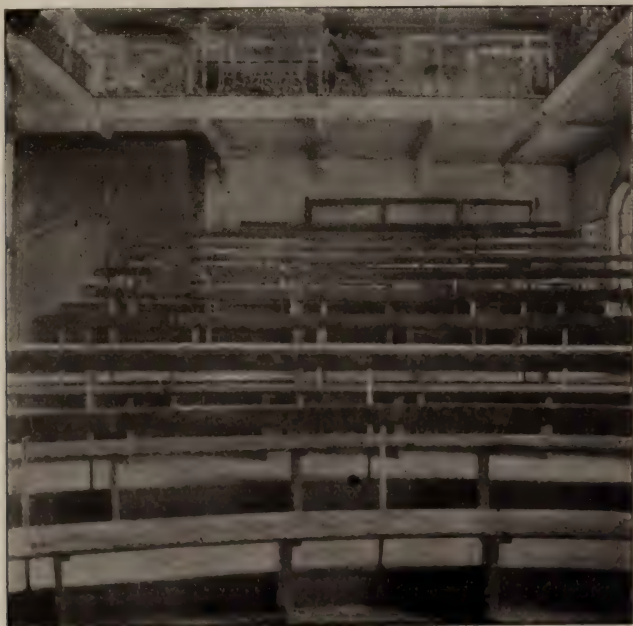
Governors, and subscribers can issue tickets to the poor, under this law of the hospital: "Every poor applicant suffering pain shall have gratuitous assistance, but necessitous persons requiring special operations, shall be admitted only by the recommendation of a Governor. No donor or subscriber will be supplied with dental appliances. In this hospital, the British Dental Association, and the Odontological Society of Great Britain, hold their meetings, and here Charles S. Tomes lectures on anatomy and

physiology; they have a student's dental society, as have all the dental hospitals; in all their history we have found the name of only one student from the U. S., H. Murray, California.

Donations are not infrequent, and they lately received one of twelve hundred and fifty dollars from the trustees of Smith's charity.

Students who enter this hospital, do so upon the understanding that it is their intention to obtain the dental diploma of the Royal College of Surgeons, England.

After passing a preliminary science examination, persons must be apprenticed to a registered dentist for three years, then they can register as a dental student, or in place of working and studying with a dentist, they are often apprenticed or indentured to the dental hospital for three years, paying two hundred and fifty dollars yearly; after this period has elapsed, they enter both a dental, and general hospital, where they remain for two years, paying one hundred and twenty-five dollars each year they now obtain the degree of L.D.S. (Licentiate of Dental Surgery) diploma fee one hundred dollars, and can begin to practice



AMPHITHEATRE, DENTAL HOSPITAL, LONDON.

if desirable, still studying and passing examinations from time to time until they receive the M.R.C.S. (Member Royal College Surgeons), or after obtaining the L.D.S., instead of practicing they study at a general hospital for two years, at one hundred and twenty-five dollars yearly, they can then present for the degree of M.R.C.S.; diploma (examinations) fee one hundred and seventy-five dollars.

The fees vary in different colleges and hospitals.

Each student must make two hundred fillings per year; twenty-five of them in "dead teeth," also six artificial dentures, two cases of regulation, and two pivot teeth, each year.

The minimum charge for an upper or lower denture is ten dollars, and such payment must be made at the time the case is undertaken, through a Governor, donor, or subscriber to the hospital. The patient must present a special application certified by a clergyman, minister, or justice of the peace, that the applicant is in necessitous circumstances.

Among the list of instruments the student is required to have, we find the forms of several Americans, viz: Tees, Abbott, Howe, Corydon Palmer, C. R. Butler, Webb, Varney, Donaldson, Weston, Arrington and Taft.

The first *special* dental school established in the United Kingdom, was the Metropolitan School of Dental Science, London, 1859. Not in existence at present.

The National Dental Hospital and College, London, is located on the corner of Great Portland and Devonshire streets; the hospital was founded in 1861, the college in 1877, they occupy all of a new three story building 50x60 feet, finished interiorly with hard wood and white enameled brick, thus adding to the light, and sanitary condition, the rooms are well furnished and equipped.

His Royal Highness the Duke of York, K.G., is president of the hospital, and among the managers, are many other titled gentlemen.

The consulting dental surgeon is Sir Edwin Saunders, F.R.C.S., he is also surgeon dentist to Queen Victoria.

The lecturer on operative dental surgery, is George Cunningham, D.M.D., L.D.S., who wrote the prize essay on Dental Hygiene for the Columbian Dental Congress, in 1893. One of the dental surgeons is Thomas G. Read, D.M.D. Harvard, L.D.S. England, and one of the graduates is Charles M. Cunningham, D.D.S. Michigan.

Students must enter for two years, and attend two thirds of all lectures before they are entitled to examination for a degree; lectures begin in October and end in July, and some of them are given at 5, 6 and 7 P.M. Ladies are admitted as students both to the college and hospital; the stopping rooms (operating rooms) are lighted by electricity and have accommodation for sixty chairs. The college provides all the special dental lectures required by the curriculum for the dental diploma of the Royal College of Surgeons, England, and it pays five hundred dollars per year for poor rates and taxes.

They have life governors, annual governors, life subscribers, and annual subscribers. Every donor to the hospital of one hundred dollars shall be a life governor, and entitled to recommend twenty patients annually. Every donor of fifteen dollars annually shall be an annual governor, and entitled to the same privileges as life governors. Every donor of fifty dollars shall be a life subscriber, and entitled to recommend ten patients annually. Every donor of five dollars annually, shall be an annual subscriber, and entitled to recommend five patients annually. Every donor of ten dollars annually, is entitled to recommend ten patients annually. Every donor of twenty-five dollars, is entitled to recommend five patients annually. Every executor, under direction in the will of a testator, who pays five hundred dollars or more, shall be a life governor. Every clergyman, who by a collection in his church obtains and donates twenty-five dollars, shall be entitled to recommend ten patients during that year; if he donates one hundred dollars, he shall be an honorary governor for five years, and if he donates two hundred dollars, he shall be an honorary governor for life.

In the annual announcement is published a list of donors and subscribers, with the amount opposite each name. The names of seventy ladies (and more gentlemen) appear in the last list, and the amounts vary from five dollars to two thousand. Baroness Burdett Coutts is one of the contributors, also the corporation of the city of London.

Before a person can register as a student he must pass an examination, viz.: (1). English grammar and composition. (2). Latin grammar, and translations of easy passages. (3). Arithmetic, including fractions; algebra, simple equations; geometry, 1-2-3 books of Euclid. (4). Elementary mechanics of solids and

fluids; elements of statics; dynamics; hydrostatics. (5). One of the following subjects: Greek, French, German, Italian, logic.



THE NATIONAL DENTAL HOSPITAL, LONDON, ENG.

Among the list of instruments the student is required to have, some are of American manufacture and others are copies; a very few of the text-books are of American authorship. We present an exterior view of the building.

A medical education entitles its possessor to practice dentistry, yet the course of study for such does not include any special dental instruction.

Thomas Guy, at whose "sole costs and charges" Guy's Hospital was founded, was born in 1645, at Horselydown; at the age of fifteen he was apprenticed to John Clark, bookseller; when his apprenticeship ended he became a freeman of the Stationers' Company of London, and started in business with one thousand dollars. He printed a large number of Bibles, having obtained from the University of Oxford an assignment of their privilege; he sat in all parliaments from the third of William the Third, to the first of Queen Anne; he leased ground for nine hundred and ninety-nine years, and erected the first building which was dedicated in 1722; he died 1724, aged eighty.

In 1829 William Hunt, of London, died and left a bequest to the hospital of \$900,000; a lady has recently given \$30,000, and a gentleman \$25,000. The endowment fund now exceeds one million dollars.

The Rt. Hon. W. E. Gladstone was a staunch friend, and the hospital proposes to erect a memorial to him—to be placed in the hospital.

Guy's Hospital Dental School, near London bridge, was opened in 1889, and in 1890 a well-lighted operating room (conservation room) large enough for fifty Morrison chairs, and a spacious laboratory, and waiting rooms were built. At this hospital there are sixty sets of rooms where students can be accommodated with room and board at a moderate charge, but if they enter the building after 11 P. M., they are reported. The students' club contains reading rooms, library, gymnasium, and dining-hall, where dental and medical student members are supplied with luncheons, dinners, etc.; they also have a nine-acre field near the city, where the Clubs' Union play cricket, foot ball, tennis, target practice with the rifle, and ride the bicycle. The library referred to has 6,500 volumes, which are accessible on making a deposit of five dollars.

The preliminary examination for entering the dental or medical school is the same, and is very like a schedule already given. Every inducement to take the M.R.C.S. and L.R.C.P., together with the L.D.S., is offered by studentship at this hospital; patients are not required to obtain cards of admission as in the case of hospitals already noticed. Patients not entitled to free fillings, pay twelve cents each for amalgam or cement, and twenty-five cents for gold not exceeding sixteen grains, any excess is at rate of eight cents per grain. The charge for crowns is from twenty-five to seventy-five cents, and for bridge-work seventy-five cents per tooth. No charge for artificial dentures or regulation plates.

The winter session begins October 1st and ends March 31st. Summer session begins May 1st and ends July 31st; the course lasts through two years, exclusive of apprenticeship. Students before graduating must make three hundred and fifty fillings; sixteen crowns; six regulation cases; six dentures; twenty scalings; treat forty pulpless teeth.

During the past year twenty-eight thousand patients received attention.

Among their text-books we noticed Essig's Prosthetic Dentistry and Richardson's Mechanical Dentistry, and among the forms of American instruments—Evans, Abbott, Howe, Case, Butler, Varney, Webb, Donaldson, Ivory.



GUY'S HOSPITAL, DENTAL SCHOOL, LONDON.

The English dental hospitals do not give a list of members in each class, but do give a list of graduates since the founding.

On the surgical and medical staff of Guy's Hospital there are three dental surgeons, and accommodations are furnished for dental patients in one of the wards.

A cut of the exterior of the building is herewith presented.

(To be continued.)

Notes on Pyorrhea Alveolaris.*

BY O. N. HEISE, M.D., D.D.S., CINCINNATI.

"Read many such, and then ask what is to be done."

ROBERT BURTON—*Anatomy of Melancholy*.

It will not be my aim to present for your consideration a long and learned dissertation,—"*Quellen studium*," as the Germans call it,—on the etiology, pathology and scientific treatment of pyorrhea alveolaris, but content myself with offering a few cursory remarks on the subject which is of such paramount importance and practical interest to us all, yet looked upon as a *bete noir*.

*Read before the Ohio State Dental Society, December, 1895.

To such an extent has this disease become prevalent that at least 25% (according to Dr. Talbot) of all people over 25 years of age are thus more or less afflicted. Twenty-five years ago it was not considered of much importance by the dentist; to-day, it is giving him more trouble than caries of the teeth. If, therefore, I can add anything to assist in bringing about a more careful examination of the mouths of our patients in order to establish an early diagnosis and thereby effect a speedy and permanent cure, I will feel that my labor, however slight, has not been in vain.

It is in the early recognition and treatment of this disease that we can do the most good.

The term *Pyorrhea Alveolaris*, so universally used, I think, has been a hindrance to the early and correct diagnosis and treatment of the trouble, as many have thereby been led to believe that unless pus is present that they are not dealing with this disease. Nothing, in my estimation, is more erroneous: the presence of pus is not a requisite, but an accidental complication due to an infection of the pocket with streptococci and staphylococci. Any number of cases run their course without having or showing that symptom to any degree, or in fact, not at all. It does seem to me that we have looked upon it as a strictly dental disease, all the trouble emanating from the teeth (and the tartar deposits upon the roots), everything seeming to center upon the periodontal membrane, leaving out of consideration the influence exerted by the varying conditions of the alveolar process, and the gum tissue surrounding it. The presence of pus and deposits upon the teeth are looked upon as the cause of the disease by a great many; whereas they are only secondary. In course of time, it is true, they do act as exciting agents in its further development, and as a decided hindrance to the establishment of a cure.

In order to bring out this phase of the subject, I cannot do better than to present for your consideration certain notes on *pyorrhea alveolaris*, which I presented a year or more ago at a meeting of our City Dental Society comprising some of the results of Prof. Baume's investigation regarding this disease. I do not claim that his ideas are new, or proved beyond a doubt, but in my conversations with dentists about *pyorrhea alveolaris*, they all seemed to be unfamiliar with these ideas, and I find few if any references to Prof. Baume's work in any of our literature. Hence I have deemed it best to again present them in this way.

According to Prof. Baume, pyorrhea alveolaris is an accidental symptom of numerous and varied pathological processes in the bone, periosteum, periodontum and gingiva, all having the same result, namely, the inducing of an atrophy or absorption of the weak and delicate alveolar lamella, modified by the peculiarities of the anatomical construction of the so affected parts, thin paper-like septa, lax gum tissue, weak development of the roots, and the entrance and deposition of foreign matter, such as mucus, tartar, food, and bacteria into the pockets, thereby presenting a variety of forms of this disease. Prof. Baume suggests the name of "atrophia alveolaris præcox," the wasting of the alveolar ridge and presence of pockets being the main feature of this disease, and not the flow of pus, or the presence of tartar. A premature loosening of the teeth presents itself often without any apparent cause. In the majority of cases we can trace some underlying constitutional trouble, or some local lesion. Of the constitutional causes there are many; such as syphilis, diabetes, tabes, gout, rheumatoid arthritis, digestive disturbances, etc. Among poisons, we have mercury, lead, arsenic, phosphorus, and others. In women the diseases of generative organs, disorders of menstruation, pregnancy, and the climacteric period, are very favorable to the development of gingival irritation. Many affections of the jaw without gingivitis will tend to the premature loosening of the teeth.

As a rule, however, atrophía alveolaris præcox and gingivitis marginalis not only co-exist, but are dependent on one another; and in the majority of cases, it is the gingivitis that acts as the exciting cause. Disturbances of innervation have a special influence in bringing about a premature alveolar atrophy. In tabes dorsalis we have a rapid progressing loosening of the teeth, due to the wasting or dissolution of the alveolar process, brought about by a sclerosis of the trigeminal nerve in its branches or its seat of origin.

Local diseases affecting the nutrient supply of the alveolar lamella and the parts adjoining tend to a change in the density and firmness of the same. Such are diseases of the pericementum, periosteum, and principally of the gingiva.

Examples of the former we have in both acute and chronic pericementitis, and osteitis, where the teeth are loosened to a great extent and may remain so permanently, without the gums

being involved per se, owing to the development of granulation tissue, and porosity of the dental process also, as shown by the accidental hard biting on one tooth, resulting in a permanent loosening of the same, due to an injury to the periodontium.

All seem to agree that the inflammatory conditions of the gums, either of local or systemic origin, act as a primary exciting cause in the production of alveolar atrophy. The irritating, inflamed and relaxed gums will sooner or later have a deleterious effect on the adjacent parts, namely, the periodontium and periosteum, inasmuch as it thereby affects the nutrition of the parts, and so damages the same, the influence being mostly felt in weakly developed, thin, paper-like septæ.

The pathology of these processes, no matter what the causes of the nutritional disturbances are, can be summed up in brief, as follows: owing to the inflammatory process around about the alveolar border, which also influences the neighboring parts, the Haversian canals communicating with the periodontium and the outer periosteum become enlarged, the hyperemia of the gums with that of the periosteum, or periodontium, leads to a granulation of the medullary tissue in the canals, and so causes a light form of osteoporose to be developed. The dental process which in its normal condition has very small interstices, shows now much larger openings; the porosity which in its beginning is limited to the free border and slightly below, gradually extends deeper as more of the inflamed gum and its connecting periosteum are rendered unfit for supplying nutrition. The irritation also extending from the border to the periodontium, gives rise to the formation of periodontial granulations, owing to the granulations, which have principally sprung from the medullary tissue, the dental process becomes porous or rarified. The solution or wasting of the alveolar or dental process may proceed in a gradual way, as in cases of senile atrophy consuming many years, or where it occurs in association with some acute disease of the oral mucous membrane, and the gums run a rapid course, terminating in the loss of the teeth within a few days or weeks.

The state of the pockets varies as that of the gums themselves. They may be inflamed, reddened and swollen. Only in the minority of cases do we observe an apparent normal condition of the gums and in the presence of the pockets find them closely fitting to the necks of the teeth so that a retention of deleterious

substances is impossible. Few cases, however, remain in this condition; in the vast majority the pockets are not only deep and wide but are patulous, so that foreign substances can enter easily and give rise to the development of bacteria and formation of pus, the presence of which has led many to believe it to be the cause of the disease, and gave rise to the coining of the name pyorrhea alveolaris by the French. The amount of secretion is dependent on the intensity of the inflammation, size of pocket, and to a great extent on the care and cleanliness bestowed upon the teeth and mouth by the patient.

Pyorrhea alveolaris, then, is only a symptom and oftentimes wanting in the premature atrophy, although nearly all authors seem to think it to be the cause, or at least an essential requisite of the disease. The following facts, however, speak against it:

1st. In pronounced loosening and rapidly progressing alveolar atrophy there may not be present a trace of pyorrhea.

2nd. In light forms of atrophy and slight loosening of the teeth pyorrhea may be largely present.

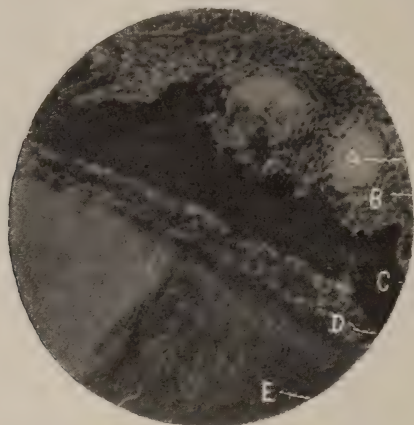
3rd. We have a gingival pyorrhea in children, resulting in the loosening of the teeth, but not accompanied by atrophy or absorption of the alveolar borders.

If a predisposition exists, it must be in the anatomical formation of the parts, and therefore is transmissible from parent to child, namely, a weak development and deficient nutrition of the alveolar process and roots of the teeth.

But to go into a full explanation of the so-called inherited tendencies would be beyond the scope of this paper, as it would necessitate a consideration of this minute autonomy, development and nutrition of the various parts concerned.

The treatment, as you are well aware, consists in the thorough removal of all deposits. This is easily said, but not so easily done, as it requires patience, time and a delicate sense of touch in order to detect the smallest particle on the root; and while removing the deposits it is well at the same time to also remove by curetting the slightly necrotic portions of the alveolar ridge, being careful, however, not to mutilate the parts and thereby lessen the chance of recovery. For that purpose we formerly used the terrible looking Riggs' scalers, but we now have instruments much better suited for the removal of deposits in the delicate and well shaped instruments of Drs. Harlan and Younger.

After a thorough removal of the deposit and curettement of the pocket, removing the necrotic bone and granulation tissue, and washing out of the pockets by repeated syringing with hot water, apply lactic acid in a thorough manner, which application has a pronounced effect in promoting a healing of the affected parts, the lactic acid having not only the power of inducing a healthy granulation tissue to spring up, thereby ensuring a union between the tissues of the pocket and the root, i.e., by partly decalcifying



A—Haversian Canal. B—Bone. C—Pericementum. D—Cementum. E—Dentin.

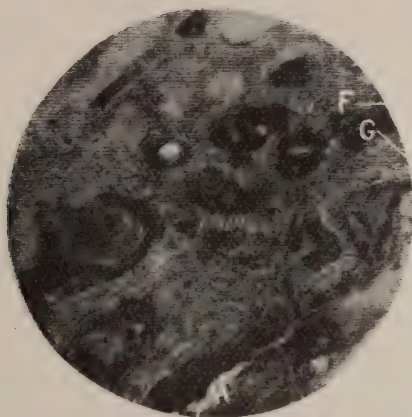
the outer layers of the root, thus opening the mouths of the canaliculi, and stimulating the adjacent tissue to a healthy action.

Nothing accomplishes this so well as lactic acid and phenol-sulphoricini; which action is well shown in its power of promoting a healthy granulation in tubercular ulcerations in the upper air passages, these being about the only remedies besides the application of galvanic current which will induce such ulcerations to heal. These remedies are best applied by soaking strands of twisted cotton in them, and then carefully packing into the pockets around the root, and leaving it in position for awhile, when you will find that the blood oozing out will be of a blackish color. After having pursued the above treatment, the patient is prescribed an antiseptic mouth bath, such as borolyptol, benzo-lyptus, or tar water and witch hazel, with hydronaphthol and oil of cinnamon.

The above to be held in the mouth not less than three or

four minutes and used thus frequently the first day; after that, in same manner three or four times daily; with careful toilet of the mouth.

Whenever I can induce the patient to take such care as to keep off the soft tartar which forms so readily in many of these cases, I feel confident of success, except where there has been a complete loss of the alveolar structures about the tooth, the same rising in the socket on the release of pressure; these latter being



F—Bone. G—Haversian Canal. H—Haversian Canal.

typical cases of pyorrhea alveolaris which have been allowed to advance too far, and should have been properly treated years before; yet even in some of these apparently hopeless cases a decided and often a lasting benefit will result from the proper treatment.

Besides the above local treatment it is well in the more marked cases to proscribe the too frequent use or indulgence of starchy foods, sugars and meats, advising the liberal use of water, also taking lithia salts in some form. Of late, the ozonized lithia water has been brought to my notice, and seems to be of benefit in cases where indicated. The cutting down of starchy foods and sugar as well as the too liberal use of meats and heavy alcoholic beverages has in my observation been of decided benefit to these patients. At the same time I insist where I suspect an underlying constitutional trouble that they consult some medical practitioner regarding their case, and especially where, after a few

thorough local treatments, I fail to get the proper response (or results), and have frequently observed that my local treatment in conjunction with the general treatment instituted by the medical practitioner would be decidedly more effectual and permanent. This is well marked in the gouty and rheumatic cases, and especially in diabetes mellitus; and here I might refer in an off-hand way to the rather distinct effect this disease has on the oral mucous membrane in its first affecting the superior maxilla, also in producing a distinct and characteristic odor in the mouth rather hard to describe, but once noticed easily recognized thereafter, (described best in German as "ein faden geruch"). In fact, the various symptoms produced might be looked upon as pathognomonic of the trouble, and should be carefully considered. The relationship of the oral manifestations in diabetes mellitus has been well shown by the investigations of Dr. F. Schneider Hofzahnarzt in Erlangen, and from whose article on this subject I have quoted.

In order to show and give you some idea as to these pathological processes in the bone (alveolar process) I have brought with me some micro-photographs made by my friend Dr. M. H. Fletcher, of Cincinnati, whose original and careful work in dental histology and pathology we ought all to commend. These micro-photographs will, I think, also prove beyond a doubt the existence of haversian canals in the alveolar process, a fact denied by some members of our society (The Odontological Society of Cincinnati) at the last meeting, when exceptions were taken to the statements of Dr. Fletcher and myself regarding this fact of their presence and the influence exerted and part played by them in the repair and absorption of the alveolar process.

DISCUSSION.

DR. OTTO ARNOLD: It was said many centuries ago by a celebrated man, "If only my enemy would write a book." It is hard to write, but easy to criticise. It struck me very forcibly that it might be a good plan to make a parallel comparison between the theory of the two men, Dr. Baume and Prof. Peirce. Dr. Baume's theory was given in full in Dr. Heise's paper and does not differ materially from Dr. Peirce's theory except that he opposes the term *Pyorrhea Alveolaris* and offers this one "Atrophia Alveolaris Præcox." That term in plain English means

simply premature atrophy of alveolus, etc. Now as briefly as possible I will give you Dr. Peirce's theory: "Pyorrhea alveolaris" is a generic term which, strictly defined means a flowing of pus from an alveolus. Many terms have been given to this disease, but all simply represent as many diverse views. As the term is now understood, pyorrhea alveolaris includes all of those cases of morbid action characterized by the following features: a molecular necrosis of the retentive structures of the teeth (their ligament, the pericementum), an atrophy of the alveolar walls, together with a chronic hyperemia of the gum tissue which leads to limited hypertrophy. Also with a deposit of calculi upon their surfaces. The disease is generally but not always attended by the flow of pus.

Clinically, the cases in which these phenomena are observed may be divided into two classes: 1. Those in which the diseased process appears to begin at the gum margin. 2. Those in which the diseased process begins at some portion of the alveolus between the unbroken and apparently healthy gum margin and the apex of the root, the pulp of the tooth being alive.

These two cases are so different that each requires a separate description. The first. The predisposing causes may all be included under the head of disorders causing a subacute inflammation of the gingivæ,—accumulations on smokers' teeth, fermenting deposits of food, mouth-breathers' gingivitis, and malocclusion, etc. The exciting causes, however, are subgingival scaly deposits of calculi. This causes irritation of the gums which becomes more marked as the scaly deposits encroach upon the margins of the alveolus. The disease progresses, the teeth loosen, and ultimately drop out and the injected gum remains as a flabby mass, all disease ceases with the loss of the teeth. The process may involve any number of teeth."

"The second class of pyorrhea seems to be but a local expression of the gouty diathesis and directly dependent on the deposition of the uric acid, urates and calcium salts in the pericemental membrane. The teeth in all such cases are almost exempt from caries.

The focus of the diseased action is confined to the region toward the apical extremity of the root. First we have a distinct swelling near the apex of the root, tooth becomes sensitive, and if we examine there will be found a distinct deposit upon

the root, near the apex. As a result from a continual irritation from this deposit, we have inflammation which will extend, a disturbed relation between the blood and surrounding tissue increases, the gums become flaccid, spongy, altered in color and liable to hemorrhagic discharges; there is a gradual softening and absorption of the alveolar process." This is the theory advanced by Dr. Peirce. Now this is to my mind at least a clearer and more definite etiology of this disease than is given by Prof. Baume. We have all seen these two kinds of disease and we know from clinical experience that it is true.

I wish here to simply express myself and take exception to what this essayist has said about dentists not recognizing pyorrhea alveolaris unless pus is present. I know it is generally supposed or often at least, that dentists do not recognize it unless they see pus. While this is true to a certain extent, yet in the expression of the term as we have it to-day, we apply it more properly, therefore I say we do recognize a diseased condition there oftentimes without the appearance of pus.

Now in reference to its treatment, it is just about the same as all others have advocated in that line. Consists in a combination of local manipulations, some local surgery sometimes and of course the main aim is to remove all the deposits from the roots.

The deposits which have been found on the roots where there are systemic disorders, these deposits have been removed and examined, they are found to consist of calcium and sodium urates, free uric acids and calcium phosphates. In the face of such decided, emphatic and definite experiments I can hardly conceive how we can omit that cause from our consideration. Of course that means again in the treatment of these troubles that there must be some systemic treatment. It has been my custom for some time, when I find trouble of this kind, to inquire as to past history of the patient, if they ever had any rheumatic troubles or any symptoms of such, in this way we are sometimes able to establish a correct diagnosis as to their trouble and refer them for some systemic treatment. A marked case of this kind occurred in my own practice within the last half year, I will simply refer to it in this connection. I recognized the characteristic conditions as caused by this systemic pyorrhea alveolaris, no pus present but all the evidences of the disease in the alveolus. I stated to the lady I would endeavor to do all I could for her. I

asked as to her past health, if she had any rheumatic troubles. Why, she said, another doctor asked me the same question. I asked for what reason. I went to a doctor to have eyes treated. I said, so you had your eyes treated, for what trouble? The doctor said I had a very puzzling case, he said he had never seen anything like it, there was a deposit on the cornea of some substance which was preventing my regular business. The doctor could do nothing for it and it got worse and worse.

Now that is a very singular instance, it was undoubtedly a deposit of this same composition as we have in this pyorrhea, a uric acid sediment of some kind. It was to me a very interesting case and almost established beyond a doubt as to this class of deposits.

But now for the constitutional treatment, after we have arrested the trouble which is present, remove all deposits, for a short time there will seem to be a marked improvement, but how long is that going to continue? simply as long as the diathesis remains and that of course we cannot control. Many treatments have been mentioned in the paper, lithia water perhaps having the greatest use. I have tried in addition to that and have recommended a number of times, a tonic in the form of some of the salts of gold, gold bromide for example. There are a number of preparations of gold which seem to be doing a great deal of good just now. I have at least been able to report on patients changes in their constitutional habits and conditions by the use of some of these tonics. Whenever there has been a strong and marked tendency of systemic conditions I refer them to some physician. But I have recommended some preparations such as lithia water.

I agree again with the essayist in the statement that this is about the worst trouble we have to deal with in our practice and work.

DR. H. A. SMITH: I want to express my congratulations on this fine paper. Dr. Heise has made quite a study of this subject and, being a German scholar, he has been able to read all articles on the latest work in that line and study it. We are inclined to accept as authority what he says in reference to this in Cincinnati. Dr. Witzell has called attention to a wasting away of the alveolus. He claims we have in the beginning a wasting of the border, which assumes a peculiar hollowed out gutter-like form, and which is characteristic of pyorrhea alveolaris. If this is true, it

would be a means of diagnosing. Dr. Baume is about parallel with Witzell. Reference was made here to later ideas in reference to one phase of the disease, that formulated by Prof. Peirce. He and his school are enthusiastic in its treatment. Time is a great element in the treatment of pathological conditions, and although we cannot agree with Dr. Peirce, we should at least respect that school and await further developments before saying they are entirely wrong. Dr. Heise said nothing about the idea that pyorrhea alveolaris is an expression of gouty diathesis. I have studied that phase of the subject and am not convinced, but I may state that we do have symptoms which resemble gout. Where we have no manifestation at the gum border and have this disease, it may be due to uric acid deposits. I have had these manifestations in my own teeth, it raises the question now whether we might not well investigate that subject. If we consider the teeth as set in a joint, and it is to my judgment simply a peculiar joint, the tooth is not fixed but movable, why may we not have deposits in this particular joint, uric acid deposits, as well as in any other joint and that is significant of gout. If we have these expressions of pain in the periosteum, or what we call a sore tooth and neuralgia, why not say well, it is a joint, and perhaps we may have a deposit in the joint and especially if we can learn the history from the patient. I am watching for the studying of this phase of pyorrhea from a gouty standpoint.

DR. J. R. CALLAHAN: I have just a word to say, I do not know a great deal about pyorrhea alveolaris. I am acquainted with Dr. Heise and his theory and am inclined to accept whatever he says in the line of treatment or diagnosis, or cause of pyorrhea, or anything of that nature.

He spoke in the latter part of his paper about Haversian canals and produced photographs by Dr. Fletcher. I should hesitate to criticise any statement Dr. Fletcher might make, but as far as the photographs are concerned I would like to have some gentlemen point out to me the first indication of a Haversian canal in those photographs.

DR. W. B. AMES, of Chicago: You have been extremely kind here to-day in making me one of your number, and I want to express my appreciation of it. The atmosphere seems to fit me a little better down here than any other part of the globe, and I thank you considerably for the honor conferred upon me.

This subject of pyorrhea alveolaris is extremely interesting to me and I want to say that this paper is the most resourceful paper I have ever heard on this subject; there is more in it and more to study, and from which we can get more valuable points, than any other paper I have ever heard read. I have but just a few practical ideas to express. I believe these cases of difference cited are dependent upon each other. If we have neglected the teeth and there is a certain amount of deposit present, there comes a change in the systemic condition, with a breaking down, which is much aggravated by the local condition, and when we have present the systemic condition, the condition of the gums will be in such a state that a local condition will be much more rapid.

Lactic acid treatment, I believe, is beneficial, and yet I think there is a virtue in the treatment today in the use of gold and silver salts. Now, these are objectionable to some extent owing to their discoloring effect on teeth, yet, I believe, there is a great deal in it. It is well known that a root discolored by silver-nitrate seems less likely to take on deposits afterward. These salts also have a general systemic beneficial effect. In the treatment of a root with silver-nitrate we get a surface on which calcareous deposits are less likely to adhere, but we also get a difference in the nature of the surface of the root. I have been using gold chlorid for a couple of years in the place of silver-nitrate; the latter in a deep pocket is decidedly irritating, and may cause inflammation, while with gold chlorid we get the same effect without the irritation. I do not object to the discoloration of gold chlorid, and with two years use I am justified in recommending it. I believe in the use of lithia water, and I have made some use of the gold chlorid solution tonics, dilute solutions.

The matter of retaining the same conditions in the treatment of pyorrhea, is a matter of eternal vigilance; patient must return every three or six months, and if the patient can be worked up to the point of consulting a specialist, he will undergo more work and spend more money and you will accomplish better work.

I have here an instrument which I have had recently devised and will pass it about; it is a very good scaler, and seems to come about as near being perfect as any I have ever seen.

DR. HEISE: I do not know that I have anything special to say. I did refer to the gouty conditions as well as all the other forms. I want to say that this paper is not complete by any

means, but is simply an outline to show that there is a phase of this subject which has not been touched upon to any extent except abroad.

In regard to Dr. Callahan's statement in reference to Haversian canals, it has nothing particular to do with the subject in question; he knows they are there and if he cannot take the photograph as proof I am sorry.

I have used silver salts and lactic acid, a combination of the two; we do not get discoloration here. The use of the salts alone also close up the tubuli, and that is what we do not want. They seem to have the tendency of preventing the deposition of tartar around the roots of the teeth and keep the teeth cleaner. I could not go into detail with everything, for I would have had to make a small book out of it.

DR. TAFT: Does not lactic acid and silver salts lessen the presence of the calcareous salts?

DR. HEISE: They, all alone, have strengthening effects upon the teeth, but they close up the tubuli, and I think there is a re-growth of the periosteum about the root; with lactic acid and the salts we also get a tendency to prevent deposition of calcic salts.

DR. TAFT: Will not silver-nitrate close the tubuli more definitely than lactic acid?

DR. HEISE: Yes; but all the salts do this, but the lactic acid salts less than the others. I have never tried the gold salts, but I will try them.

DR. TAFT: Well, with the use of the acids with the salts we get a deposition of the salt, of course; we have a nitrate deposit on the surface, but it is not as penetrating as the nitrate of silver alone. Does it not make a difference in the treatment, whether the case is of long standing or recent?

DR. HEISE: Yes; in every instance a man has to use his own judgment; there is a difference in the treatment of these two cases. If we get a complete loss of tissue around the teeth, I think the best thing to do is to extract the tooth. We may be able to help it for a time by the correct treatment, but it will go back to the original condition again. Success in the treatment of this trouble, like that in many others, lies in the early recognition of the disease. We cannot accomplish a cure by the mere removal of the tartar from the roots. Dr. Ames' instrument is

about as good a one as I have seen. The benefit of the Younger scaler lies in the fact that it does not scratch the root of the tooth. We should not cut the root at all.

Ques.: Is it necessary to be careful not to lacerate the tissue and cause hemorrhage, or is it better to have a free hemorrhage?

DR. HEISE: Never lacrate the tissue any more than is necessary, as it only lengthens the time of healing.

DR. JUNKERMAN: How do you differentiate between a local trouble and a systemic trouble?

DR. HEISE: Of course there is a decided difference between the two cases, although to a certain extent one is dependent on the other. I am aware that the great variety of statements made by different men, Dr. Peirce and others have greatly misled every one. My idea in the paper was not to bring out the different theories, but to go into consideration of this man's, for that and the others would take more time than is at our disposal.

Restoring Enamel Surfaces to Porcelain.

BY DR. D. GENESE, BALTIMORE.

THE methods described recently by J. E. Nyman for restoring enamel surfaces to porcelain are open to many objections. Shrinkage, weakness or flaws will result by heating teeth with borax, and often black pitted surfaces will appear.

If necessary to grind the surface of a tooth, a good natural appearance and polished surface can be obtained, by first working over the tooth on Arkansas stone, either by hand or lathe, keeping it well moistened with liquid soap, and finishing with oxide of tin and a cork, keeping well wetted all the time with soap solution at a high speed.

The softest teeth may be treated in this way with good results.

First Learn and Then Form an Opinion.

BY B. H. CATCHING, D.D.S., ATLANTA, GA.

It was F. Mendelssohn who gave birth to the following great truth "First learn and then form an opinion, not the latter before the former, nor both at the same time."

There is vast wisdom in the above quotation, wisdom that should be learned by all. I do not know of a class of men who need it more than dentists. Very few are really entitled to an opinion on any one subject. An opinion to be worth anything must come through knowledge of the subject. For an illustration close home, we will cite Dr. Miller of Berlin as one man, and one of the only men, who is entitled to an opinion on dental caries. What is the opinion of the average speaker or writer on this subject? Nothing at all. Why? Because he had not studied and investigated the subject as Miller has. What is the average opinion on Riggs disease? They are not opinions at all, but simply expressions, and what is an expression worth unless it is backed up by thorough knowledge of the subject in question?

What is more tiresome at dental meetings than to hear a talk or talks on pathology or pathological conditions by the average speakers? Simply asserting a belief without any true knowledge on the subject. It is worse than tiresome; it is an absolute waste of time.

Sometimes we meet with men who make an assertion, as they call it "an opinion," and stubbornly attempt a defence against reason or knowledge or facts.

"First learn and then form an opinion." The older I grow the more diffident I become about speaking before a society of dentists, because I am realizing more and more how little I know.

When you listen you should learn and when you speak you should teach.

Report of the Committee of Tri-State Meeting.*

BY J. R. CALLAHAN, D.D.S., CINCINNATI.

I THINK it was some time in the year 1893, that a union meeting of the State dental societies of Indiana, Michigan and Ohio, began to be talked of. Possibly the first to mention or push the idea was Mr. C. S. Bigelow, of Toledo.

In 1893 Dr. G. H. Wilson, president of Ohio State Society, appointed what was known as the Tri-State Committee, consisting of Drs. L. L. Barber, J. Taft, G. H. Wilson.

This committee selected Dr. L. L. Barber as their representative on the Tri-State Executive Committee.

Through the influence of Dr. George Field, the first Tri-State meeting was held in Detroit. That meeting was a grand success and one that set the Ohio dentists to thinking of what they should do when the time should arrive to hold the meeting in the Buckeye State. During the administration of Dr. Henry Barnes, as president of the Ohio State Dental Society, he appointed the Tri-State Dental Meeting Committee as follows: Drs. L. L. Barber, L. E. Custer, A. F. Emminger, H. F. Harvey, and J. R. Callahan as chairman. This committee was called together at Put-in-Bay Island, on the date of the meeting of the Northern Ohio Dental Society, for 1897.

Plans for the future Tri-State meeting were discussed, but nothing definite was settled upon, except the fact that \$1,000.00 would be necessary to see the meeting through in proper form. This being in the opinion of the committee a most important point.

The matter of subscription to this fund was brought up at one of the sessions of the Northern Ohio, when this energetic little society set the pace for the State by subscribing \$100.00.

Soon after this meeting of the committee, Indiana and Michigan suggested that each State elect some one member of the State committee to represent the State on an executive committee to have entire charge of carrying on the Tri-State meeting. With but one dissenting vote your committee elected their chairman to act as their representative on the executive committee.

* Read at Ohio State Dental Society, December, 1898.

Thus the greater part of the responsibilities of organizing, providing funds and conducting this event of no small importance in the dental world, was thrown upon the shoulders of one man. The chairman of your committee, realizing most keenly the responsibilities of the position, determined to allow no personal sacrifice to swerve him from carrying out the wishes of his State society.

The one desire of the Ohio State Dental Society being, as he understood it, that the Ohio dentists should prove to their guests that they were worthy the trust reposed in them.

In all undertakings of life it is wise to determine what are the fundamental principles upon which success depends. After due consideration it was decided that success depended, so far as the Ohio committee alone was concerned, upon some five or six points, or as might be termed fundamental principles, as follows:

1st. Entire harmony and unanimity of spirit throughout the State.

2nd. A sufficient amount of cash, *in bank*, before a dollar was spent.

3rd. Wise selection of place of meeting.

4th. Proper advertising.

5th. Special entertainment.

6th. Eternal, energetic push and hustle on the part of all concerned.

Now let us review briefly these six principles, as we have termed them.

First, harmony and unanimity throughout the State. This was the least difficult of the six propositions to live up to, for an experience of some fifteen years has taught me that if the Ohio State Dental Society is once convinced of the righteousness of a cause they will back it to the limit, with action and purse. So I say it only required a little forethought, a trace of diplomacy and an honest effort, and to deal justly by all, to preserve that unity that brings strength. This is the greatest secret of our success.

Second, a sufficient amount of cash, *in bank*, before a dollar was spent. In how many States would it be possible to literally live up to this second proposition. It is with pride in my State that I tell you it was done in Ohio, in the season of '97 and '98. The subscriptions were as follows:

Chas. I. Kelly, \$10.00; J. R. Callahan, \$10.00; O. N. Heise,

\$10.00; L. E. Custer, \$10.00; L. P. Bethel, \$10.00; C. H. Harroun, \$10.00; L. L. Barber, \$10.00; W. D. Snyder, \$10.00; W. H. Hague, \$10.00; E. G. Barnett, \$5.00; A. F. Emminger, \$10.00; W. H. Hersch, \$10.00; A. E. McConkey, \$10.00; J. A. Lupton, \$10.00; C. R. Butler, \$5.00; G. Mollyneaux, \$10.00; W. H. Todd, \$10.00; F. A. Hunter, \$10.00; J. F. Stephan, \$10.00; S. B. Dewey, \$10.00; H. F. Harvey, \$10.00; G. S. Junkerman, \$10.00; H. A. Smith, \$10.00; J. Taft, \$10.00; J. R. Owens, \$10.00; W. A. Price, \$10.00; Ruggles & Dennis, \$10.00; H. C. Brown, \$2.00; Cogswell & Co., \$25.00; Cleveland Dental Co., \$25.00; Ransom & Randolph, \$25.00; S. A. Crocker & Co., \$25.00; Northern Ohio Dental Society, \$100.00; Cleveland Dental Society, \$100.00; Chas. Welch, \$10.00; H. L. Ambler, \$5.00; Henry Barnes, \$10.00; Otto Arnold, \$5.00; G. H. Wilson, \$10.00; H. T. Smith, \$5.00; H. Bartilson, \$5.00; W. S. Locke, \$5.00; W. T. McLean, \$5.00; C. R. Converse, \$5.00; P. S. Bollinger, \$5.00; C. E. Tenney, \$5.00; W. H. Tenney, \$5.00; W. I. Jones, \$10.00; Canton Dental Society, \$27.50; Cincinnati Odontological Society, \$100.00; A. T. Whitesides, \$10.00; Akron Dental Society, \$21.00; Toledo Dental Society, \$77.00; Lee, Smith & Son, \$25.00.

I should like to have had the individual subscriptions from the various local societies, but I did not think of it in time to procure them.

Total amount subscribed and paid - - - - \$912.50

DISBURSEMENTS.

	Voucher.	
Apollo Club transportation, hotel expenses from Cincinnati to		
Put-in-Bay - - - - -	1.	\$403.35
Hotel, Put-in-Bay - - - - -	2.	156.75
Hotel punch bill - - - - -	3.	40.00
Committee expense bill - - - - -	4.	137.00—\$737.10
Balance on hand - - - - -		\$175.40

As this money was subscribed to a definite fund, it becomes your duty to turn it to some other fund by vote.

Third proposition—a wise selection of place for holding the meeting. This third proposition gave your representative no little trouble and anxiety. After many trials and vicissitudes the meeting was held at Hotel Victory, and carried through to a

satisfactory close. But few complaints were placed on file. One party of juvenile excursionists became so attached to the boat on which they were traveling that they did not get off at Put-in-Bay—traveling on to Cleveland and return in order to get the value of their passage money. Good and hard they made a bluff protest to the captain, so that the extra fare might not be called for. The bluff worked. Then they tried the same game on your defenseless representative, who had to smile as if he believed the whole fake.

Fourth proposition.—advertisement. The attendance showed that the circular letters (being that portion of the advertisement detailed to your representative) did what they were intended to do.

The fifth point, viz., special entertainment, was the most difficult question to dispose of. With the assistance of a few friends the program presented was decided upon. After the entertainment the smiles and hearty congratulations of many friends caused all recollections of trouble and excessively hard labor to vanish. On all hands people seemed to be well satisfied with what had been set before them. All this made your committee-man exceedingly happy.

The sixth and last proposition. Eternal push and hustle was well lived up to by all concerned. After the work was begun there was no let up. Printers, R. R. people, steamboat people, hotel people, musical and theatrical people, all over the country were followed up and annoyed till many of them I am sure were sorry they had begun with us.

The chairman of your Tri-State Committee desires to embrace this opportunity to thank the committee for their kind and prompt support whenever called upon. Making special mention of Dr. H. F. Harvey, and to the society who supported every move made by the executive. And now after I have served you to the best of my ability for something like fifteen years, I request of you that I may be allowed to retire from Executive Committee work. There are others fully as competent, fully as willing.

DISCUSSION.

DR. HUNTER: Mr. President and gentlemen—I will endeavor not to detain you more than a week or two, but in opening a discussion upon all scientific subjects it becomes necessary to begin

at the beginning. In the year 1492, it is said Columbus discovered America, but not being present upon that occasion I cannot personally vouch for the fact, but in June, 1898, there was a meeting of the Tri-State Dental Society, at Put-in-Bay, at which I was present, and can vouch, together with many others, for the eminent success of that entertainment. Dr. Callahan, as we all know, is the one man most to be blamed for the success of that meeting, which was through his hard work, work of which I had personal knowledge, knowing that he has at times neglected his own personal and private affairs to do work for the meeting of this society and in the engineering of that entertainment.

It was through him that the Apollinaris Club [Laughter], of Cincinnati—thank you, I thought that was the name of the club—the Apollo Club. It originated in his brain to bring them to Put-in-Bay, to entertain us there. It is a musical organization, of Cincinnati, of which Dr. C. is a member, but that should not be charged up against him. I am aware that some people think that the love of music is simply a slight form of hysteria, and they may be right, but the excellent program that the club rendered for us was certainly enjoyed by everybody present. The president of the society recently sent out communications for subscriptions, not stating the purpose of same, but it is now to be made apparent. I have been appointed a committee of one to make a presentation from this society as a slight token of our appreciation of the work done by Dr. Callahan upon that occasion.

We have here—John, there's your jug; take it!!! [Loud applause and laughter.]

A beautiful water and wine set was here presented to Dr. Callahan.

DR. CALLAHAN: Mr. President and gentlemen—I know it is the custom on all such occasions to say you are taken completely by surprise, but I assure you it is a fact upon this occasion. I had no suspicion of anything of this sort. I know now why the president came to me and said he wanted \$1.00, but I gave it to him (Dr. Molyneaux here hands Dr. Callahan the dollar). I will take it and hold on to it just the same. I have his receipt for it, however I will keep the dollar. As to this beautiful present, of course I cannot express my feelings in regard to sentiment. I cannot make an extemporaneous speech. If I had known it I would have committed something to memory for an extempo-

aneous speech. It has always meant a great deal to me to know that my services were appreciated. I hope many of my friends in Cincinnati will drop in at any time and join with me in this, and those who live outside of Cincinnati, I hope will do the same any time they are in the city and we will take a round together. Thank you. (Applause.)

DR. H. A. SMITH moved that the money left from Tri-State meeting be made a special fund to be used only by vote of the society. Carried.

Proceedings of the Cincinnati Academy of Dentistry.

A Temporary Crown in a Hurry.

BY N. H. GROVE, D.D.S., WYOMING, O.

I WAS led to adopt, or rather, devise this method in the following way: Mrs. W— came into the office at 2 p.m. (in a great hurry). She had broken off a superior left central Logan, had to be present at a four o'clock dinner and must have a tooth. I proceeded to drill out the tooth, intending to solder it on to the portion remaining in the porcelain, but had to destroy the pin in getting it out.

I accomplished the desired result in a very few minutes, much to the patient's delight, in the following manner:

Grind off crown of tooth to gum margin, a little below on labial aspect just as for a Logan or Richmond. Select a plain vulcanite tooth approximately as to size and color, grind so as to make a fair joint at contact with root. Put a German silver or copper bar in root canal, roughened on portion exposed from canal. Place some warm wax on the vulcanite tooth, and push to place. Remove all in one. Trim the wax as you desire the contour of the finished crown to be, being careful not to mar the part showing imprint of root. Now take the little cone shaped piece of wood (well soaped) with the pin point protruding and stick it into the lingual surface of the wax. Then mix some quick-setting impression plaster in a tea-spoon, imbed the crown in same, building the plaster up around the inverted cone. Hold spoon over alcohol flame, plaster soon sets. Remove the cone and you

have a funnel-like opening, leading down to the wax which can be poured out with hot water.

Heat the spoon until the plaster becomes *hot* and *dry*, then pour in some Mellotte's metal and immediately take a piece of wax and force the fusible metal down into the mold so that it will completely fill the space. Cool and finish with disk on engine. You now have a crown closely and perfectly adapted to the root, can be set with gutta-percha and will last till you have time to make one out of the more noble metals.

DISCUSSION.

DR. HULICK: I do not know that I ever had an appliance of this kind presented to my notice; and I shall take great pleasure in adopting it in my practice. There is one little suggestion that I will offer, with the essayist's permission,—that is with reference to the required flux: by touching the points prior to the time of waxing, and also the end of the post, there will be enough of the flux to adhere to these points so that there will be a complete union of the metals.—both to the pin and to the post.

DR. JUNKERMANN: I would like to ask the essayist what the principal purpose of that cone is?

DR. GROVE: When you go to invest the tooth you would have to leave a little hole there. In this method you simply have to invest to lift the cone out; it is simply for a gate.

DR. JUNKERMANN: Why would it not do to make a permanent crown that way?

DR. GROVE: Mellotte's metal contracts after being in the mouth for some time.

DR. ROSENTHAL: That some principle could be used and the tooth imbedded, or an impression made of cuttle fish; you could then pour gold in there just the same as Mellotte's metal is used. There is no question about that being feasible and possible. I have molded all kinds of things in cuttle fish bone, and it seems to me it would be a very simple way to do it. If in a big hurry you would not have to wait for your plaster to harden, but would proceed immediately with the cuttle fish, by heating it up.

DR. REESE: I do not believe that would make a very good permanent crown, there is too much porcelain exposed; it would be very easy to scale that off. I make a crown myself for temporary purposes in about the same way, only the method is

quicker : take a piece of German silver about the width of the tooth and at the neck of the tooth make a slot on each side and make a post at the end of the German silver. Bend the two pins in ; twist cotton around the post and you can change the treatment from day to day. It will stick all right and it is a quicker method.

DR. McLEAN : From what I have gleaned from the paper I understand it is a crown to serve a temporary purpose. I do believe this is a splendid acquisition to the art of dental prosthesis for cases of emergency ; as far as permanency is concerned, of course that is not expected. There is just one condition that occurs to me, and that is with reference to the pathological condition of the root ; I believe if this crown be inserted where a pulp has been removed recently by accident or otherwise, unless thorough antiseptic precautions be taken, the patient will experience pain afterwards.

DR. ROSENTHAL : Even then it would be all right if this pin was a tube left open straight through. Simply take a piece of metal, pulling through the draw plate until it has the proper circumference. It would drain itself.

DR. McLEAN : I would say with reference to tubing, that the canals of all roots usually lessen in circumference the further we go toward the apex of the root ; if there is pus formed, or debris, it would fill this tube and stop it up.

DR. ROSENTHAL : If the tube should fill up, you could put a nerve broach through the tubing and withdraw the same. There are any number of ways to keep it open.

DR. SCHRAMM : We are all aware of the necessity of great haste occasionally, and while I appreciate the essayist's work in this direction I will offer a method which is almost as rapid, if not more so ; it is probably connected with a little more expense at the start. Purchase at the dental depot one dollar's worth of the old style pivot teeth of all colors. If you have those on hand you can meet pretty nearly all cases. You set tooth with the old style pivot by grinding the wood in the crown and by cementing the wood in the root canal, having both perfectly dry, and you can at any time drill out the wooden pivot. I resort to that when I cannot do anything else, and after you have used a tooth of this kind you can use it again by sterilizing it sufficiently, and if you have one hundred and fifty of those teeth on hand you can pretty nearly meet all requirements.

CASES IN PRACTICE.

DR. JUNKERMANN: One day a doctor living near here brought me a patient; as the case was recited to me. The man had complained of very severe pain in the angle of the jaw, and it had grown steadily worse until the man was compelled to take morphine. He would come back about once a week; then twice a week, and finally every day and sometimes twice a day to receive the hypodermic injection of morphine for the severe pain running through the entire jaw. I examined the case carefully, and found he had no molars in the lower jaw, and he was chewing entirely upon his front teeth. I examined into the symptoms and finally came to the conclusion that the teeth had been extracted from the mouth and that the healing process had produced bands of cicatricial tissue which had stretched upon the nerves, producing constant pressure. I finally said I thought if he would have artificial teeth inserted the trouble would be relieved, and as the case turned out, such was the result. The artificial teeth were made, and in a short time he was entirely relieved and there was no further need for hypodermic injections.

DR. GENSLEY: I saw the case; you advised the extraction of a lower tooth and I extracted it. About a month after that I was coming out of my office one day when some one came along, with a country lad about ten feet behind him, accosting me—"Say, ain't you a dentist?" I said I was. "Well, didn't you take a tooth out up there at the college not long ago for a feller there?" I replied I had. "Well, he is getting along all right now."

DR. JUNKERMANN: No doubt there was something more at the bottom of the trouble than this one tooth. I think it was a binding of the tissue over process and the consequent pressure upon the nerves. The artificial teeth relieved the pressure because it softened up the tissues by use.

DR. McLEAN: I attribute the cause of this pain to a distribution of the sensory nerves of the inferior maxillary; it was superficial of course. About the second bicuspid there is the least tissue left covering the branch of the inferior dental, and there is where the pain was produced. There is nothing very marvellous about this. As to the contraction of the tissue, the cicatrices forming in the mouth, etc., they never form as a result

of extraction: so that in this case it was probably a superficial condition of the branch of the inferior dental nerve. It may have been an abrasion of the inferior maxillary bone, or it might have been an exposure of the inferior dental nerve. Of course, the systemic condition of the patient had something to do with this constant irritation and pain, and I am inclined to believe that was all there was to it,—simply the protection to the nerve by inserting an artificial denture.

DR. STEWART: I saw a case somewhat similar to that. A physician came to me and wanted me to see a patient of his and extract some roots under ether anesthesia. She had been troubled with neuralgia a great deal and attributed the cause to some roots left in the mouth. She was wearing a full lower denture. I found one little red spot on the left side and a little line on the right side, and the trouble probably arose from a rough spot on the plate at this point where it impinged on the ridge. I relieved the plate at this point, but found the patient a few weeks later still troubled with neuralgic pains. Could find no indication of any roots being still in the mouth, and am at a loss to understand what causes the difficulty. I would like the opinion of the Academy as to what causes the pain and some means of relieving it.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

The Conditions of the Teeth and the Gums in Diabetis Mellitus.—(Clinical reports, embracing seven cases, tend to show that diabetis does not favor the production of caries but it will furnish proof of secondary manifestations upon the gums which are not above hyperemia but may be cellular exudations or even chronic suppuration. In diabetis mellitus, the absorption of the products of digestion of the carbohydrates is impaired with, they are changed to glucose and for the most part eliminated by the urine. The secretions of the salivary glands, more so those of the parotis, contain according to some authors sugar or are acid in reaction. This acidity may be due to the decomposition of the glucose

($C_6H_{12}O_6$), in lactic acid ($2C_3H_6O_3$). These changed secretions of the salivary glands are the cause of pathological phenomena in the oral cavity, affecting primarily the soft parts. The author had occasion to observe thirty cases and very often he was able to diagnose diabetes mellitus from the peculiar condition of the mouth and to call the attention of the patient to this more serious constitutional affection. These pathological complications have been treated rather meagerly in the text books. Landois and Ewald, but more so Struempell and Senator, mention the acid reaction of the saliva and softening of the gums in diabetes conditions. When the disease is of a shorter duration, we notice in all cases a peculiar flat or stale odor about the mouth, and a redness and swelling of the free margins of the gums which is constantly progressing, presenting a picture of chronic gingivitis. The gums retract forming pockets which soon are filled by microbes, causing suppuration. As the gingiva and the periodontal membrane are in close relationship, the latter will be soon evolved in the process of destruction and the whole presents a true picture of pyorrhœa alveolaris. From many recorded cases of pyorrhœa we may suppose that diabetes has been the cause thereof. The starting point of the disease is mostly in the superior maxilla. In those cases which came under my observation, it is proved beyond doubt, that the affections of the soft parts of the mouth are accompanying manifestations of diabetes; association with caries is merely accidental, caries would have developed without the diabetic condition.

RESUMÉ.

1. The affections of the gums are in most cases an accompanying manifestation of diabetes mellitus.
2. The salivary glands secrete glucose.
3. The formation of lactic acid and the caries resulting thereof is a rare phenomenon.
4. Chronic gingivitis leads slowly to pyorrhœa alveolaris and to vacillation of the teeth.
5. Glucose, if present in the fluids of the mouth is favorable to the growth of numerous microbes and these are the cause of the described pathological phenomena.
6. Lessened resistance of the structure favors an attack of the microbes which will invite any small injury.

7. The diseased condition of the oral cavity will improve by successful treatment of the primary affection.

8. Pyorrhœa alveolaris demands the establishing of an aseptic condition of the infected part.

9. Half loose teeth may again become solid in their alveoli by proper treatment and more so by proper fixation.

10. Hard tooth brushes which are liable to injure the gums should be avoided, thorough cleansing is necessary and any present acid reaction, which favors the growth of microbes, should be neutralized by proper mouth-washes, viz: sodium bicarbonate.—*Dr. F. Schneider, D. M. F. Z.*

Method of Filling Root Canals.—The pulp-chamber is opened as far as possible to have access to the root canals. The pulp stumps are carefully removed and the canals filled at once with cool-wool (carbonized cotton? Ref.) and formalin-solution. If the pulps has been in a gangrenous state, eugenol is mixed with the formalin. To enlarge the openings of the canals, sulfuric acid is used, according to Callahan, and after sterilizing, the roots are filled after the above method. The pulp chamber is hermetically sealed with cement and a permanent filling is inserted.—*Henrik Welin, Int. Med. Congress, Moskow.*

A Case of Cocain Poisoning.—A healthy man, 40 years old, took by mistake instead of a headache powder a mixture of ten grains cocain hydrochlorat and ten grains ammon-bromat about two hours after a substantial meal. Two hours later he called for the writer, stating that his hands and feet felt benumbed. The muscles of the face trembled and the oral cavity became dry. The eyes were swollen but wholly immovable, probably as a result of paralysis of the muscles, except the levator palpebræ superioris. The pupils were half dilated but also immovable. I ordered three drachms of wine of ipecac to be taken in warm water by the patient, causing prompt emesis. In about forty minutes after taking the cocain, the speech became incomprehensible and the respiration disturbed, the pulse ran up to 120 beats a minute, full and pushing, but no syamosis occurred. As the respiration became more and more embarrassed, I made a hypodermic injection of 1-10 gr. strychnin and 1-100 gr. digitalin. The effect of the drugs were momentary noticeable, respiration became more easy, but the pulse-rate did not diminish for some time. The patient

slowly recovered and a few cups of hot, strong coffee, were of material help. In about 7 or 8 hours the patient was again well and, although weak, could do his daily work.—*H. P. Palmer, L. R. C. P., Lancet.*

A Few Trials with Orthoform.—Orthoform is a new remedy, without odor or taste, employed as an antiseptic and local anesthetic. It is non-poisonous. The writer has used it successfully for the last six months in dental practice. After extraction of teeth it will almost instantaneously relieve the pain of the wound. As stated before, being tasteless, it is of great value in child practice. As a sterilizer of fistulous canals, it is valuable; it will promote cell-proliferation. It should be employed in substance by taking a small quantity of the powder upon the cotton-wrapped nerve-needles. Inflammation of the gums with pus exudation will readily yield to the application of orthoform. Ulcerations of the mucous linings of the cheeks are materially benefited by the dry application of the drug. Being only sparingly soluble in the fluids of the mouth, it will retain its contact with the affected part for a long period, forming a protecting surface.—*Wittkowski, Odont-Blätter.*

Death Resulting from Difficult Eruption of a Lower Wisdom Tooth.—A man, about 33 years old, came to the clinic in Nancy, telling that he was suffering with the mumps. He had high fever and was delirious. The jaws were closed in trismus, the face and neck were swollen. Three days after the first examination the general state of the patient seemed to have improved. The swelling was reduced to the angle of lower jaw, the delirium had left him and he could open the mouth to some extent at which occasion a small drop of pus could be seen. The physicians diagnosed the case as suppurative ostitis of the lower jaw resulting from the difficult eruption of the third molar. At present no operation was performed. The next day the patient was worse, he had a temperature of 104. 90° F., the left side of the body was wholly paralyzed. A large incision was made, no exudation of pus resulted; the next morning the patient died. Autopsy revealed the presence of pus between the cranium and the coverings of the brain and suppurative ostitis of the cranium itself, leaving the brain unaffected.

Tri-State Dental Society Proceedings.

DISCUSSION ** ON PAPER BY DR. H. A. SMITH, ENTITLED "CONCERNING THE POSSIBILITIES IN THE ART OF FILLING TEETH." †

DR. D. A. HOUSE: Some have made the statement that our best operators have reached the limit in skill and perfection in the filling of teeth, and further improvement must come in the changes of environment, which will lessen the recurrence of decay. It is not my intention to discuss the methods—to improve this environment. To increase the amount of oral secretion would prevent it.

I will consider whether the possibilities in the art have been reached. Concerning the question "is the filling of teeth a failure," it is no more applicable to us than that the science of medicine is a failure. A body is always liable to the recurrence of disease. Because a great number of teeth fail in the lapse of two or three years, is not a rule that filling teeth is a failure. It is usually due to the carelessness of the operator. The work, of course, of our best operators is still open to criticism. Not so in every filling, many of the smallest, most difficult to make, reach a point which cannot be excelled by our present filling material. While I acknowledge and practice the desirability of keeping the enamel margins out of point of contact, yet many operators cease before this has been reached, because of pain to patient. So as long as the dentist is required to stand this strain he will certainly become tired and nervous and so much overtaken that it will be impossible to do his best work under these conditions. If it were possible to charge sufficient for the work, so as to make as good a living within five hours of a day as he does now in ten, the quality of work would, no doubt, be much improved. Does it not often occur to the operator—"Oh, I am not getting much for this, so will make it accordingly." This makes poor fillings."

Another thing is the fear of becoming known as slow operators; those known in the profession as best and most skillful are the most rapid. These things often make the work a failure. I have known good operators to spend a half day on one filling.

* These discussions were unavoidably delayed and could not be published sooner.

† See page 363—1905 Vol. OHIO JOURNAL—for this paper.

There is no doubt that rapidity is often a source of failure in operations. Therefore, until we get better prices for our work and put more time on fillings, and be able to cut living dentine without torturing patients, the possibilities in the art of filling have not been reached. [Loud applause.]

DR. BARRETT: I am not going to offer any commendations on this paper. "That life is long which answers life's best ends." That paper is long which most completely covers the subject in the fewest words. Although quite a complete paper, there are yet a few facts which have not been fully utilized.

I want to refer to a few of the difficulties which must be overcome in the insertion of the filling.

It has been positively determined that caries is due to the solution of the calcic salts, through the action of acid produced by the proliferation of micro-organisms, these coming in through opening in enamel or because of some imperfection in the enamel; this is followed by a complete breaking down with the collection of many organisms; we call this the field of infection. Suppose we have a cavity which is just below the point of contact with the next tooth, at which decay usually has its inception; the reason—it is just the point at which food lodges, which becomes the matrix in which the organisms proliferate with the production of an acid, and hence we have below this point the beginning of decay and solution of enamel.

The usual process of preparing a cavity, before filling, is to excavate as much of cavity as is disintegrated, but you saw in the slides that beyond this portion we had the zone of infection or commencement of decay, and which precedes the breaking down in the cementum, in the openings called intertubular spaces. These enlarge and two spaces will unite into one, break down and zone of infection will enlarge, and this continues unless checked. I do not suppose that a cavity is completely excavated when we reach inward near the limit of its zone of infection. Suppose I excavate and prepare my cavity as most dentists do, have I reached the point of danger; will an ordinary filling of this kind prevent the tooth from decay, and the entrance of the organisms which we know and which we all agree are the cause of dental caries? If we know the absolute cause, can we remove the last predisposition to decay? Yes, if it were possible to reach to the limit of this zone of infection, and if at the same time we can so reduce

the environment as to prevent further decay. Dr. Black has thoroughly demonstrated this and it is so strange that so many think with their elbows and do not comprehend the fact.

I want to make a point right here, and that is that this zone of infection has gone beyond the point at which excavation of the tooth would in almost any case endanger the pulp, and destroy vitality of the tooth. It is impossible to excavate back to the point of infection, and yet as long as there is that zone of infection in which has been implanted all the micro-organisms which will produce the caries, and everything necessary to carry it on, there is a danger of the filling becoming a failure. We have conditions which will cause re-decaying. That is, the great trouble and danger; we want to overcome it if possible.

We are sometimes asked, what does all this mean, about that "bug theory and caries," there is a practical use of this. All of these organisms which produce this disease are called aerobic, that is, live only in the presence of oxygen. If imbedded in tissue where oxygen could not penetrate, they could no longer exist. We can artificially produce this and hence when we have thoroughly hermetically sealed that cavity from oxygen or the air, we have destroyed these organisms, and that is why a filling must be absolutely perfect if it is going to preserve the tooth—not the slightest chance for the entrance of bacteria. Air must be excluded and the cavity should be hermetically sealed.

Gold is not the best material with which to hermetically seal a cavity, but it possesses other qualities which make it the best filling material. Gutta percha is probably the best material for preventing recurrence of decay, but it requires a very high degree of skill to put in a filling of this material. We can use some antiseptic which will penetrate the dental tubuli and thoroughly destroy the germs, hence the necessity of thoroughly sterilizing a cavity before commencing a filling. I do not pose as the highest authority on filling teeth. There is something else which I think necessary, the use of something more penetrating, which will protect tooth from recurrence. I use carbolic acid, and then I cover over that portion which I think contains the infected dentine, some kind of material before inserting the filling; I use a solution of some of the balsams—Canada balsam or something else. I spread this over the infected area and it assists in preventing the penetration of air to this point to cause proliferation of micro-organisms.

After determining how far has been the penetration of micro-organisms, and excavating as much as possible, the next thing is to thoroughly sterilize it by soaking well with some thorough antiseptic, then drying and covering infected area with something to exclude air, and over this insert filling. Even then you have not a perfect filling. After having gone over all this, the next thing is to see that the mouth is thoroughly antiseptic.

I have never found such a case as this, and I do believe that no such condition as this exists, as it is impossible to keep the mouth in a complete antiseptic condition. The ordinary mother, for example, has something else to think about than care of the teeth. She does not give them her care and consequently the time finally comes when she comes to you with her teeth in the worst possible condition. If she would use some mouth wash and thoroughly sterilized her mouth, recurrence of decay would not take place.

The chief factor is to be thorough in the sterilizing of the cavity and keep it so. If we do this there need be no fear of recurrence of decay.

DR. BUTLER: Dr. Barrett has such a wonderful power of suggestiveness that it may not be within my power to have any effect upon him. But as Dr. Smith has said that many declarations that filling teeth is a failure, have been made, I will say I am one who made such a statement and I do not expect to use any argument to claim what I said as true. I said it with this view of the subject, that with all the improved methods of securing tooth from moisture during the process of the operation and with what is supposed to be the most modern achievements in the way of instruments and preparation of gold, I question whether there are any more successes or as much, following the methods in that direction, to-day, as there was forty or fifty years ago. Still, if that be true, some will say that it is not so, but nevertheless look the case fairly in the face. Take the number of operators to-day and compare them with the number forty years ago, and the question is whether we make fillings that are any more saving to teeth; if we are not doing so the question still comes up, is it a failure? We do not any of us question the operator's ability to fill a tooth, but it is the recurrence of decay. Dr. Smith has spoken of gold being the best material, and he has also mentioned some other materials. Gentlemen, it is not the filling

that fails, it is the tooth structure. That is the point and that is where our great effort should be put to save a tooth from destruction, that is the prime object of patients coming to us, and that should be our principal effort.

Dr. Barrett, I think, stated a complete and perfect gold filling would hermetically seal a cavity. With all our fine instruments and skill and book gold, etc., how many of us succeed? Take all the fillings made by the most able operators, put them under the magnifying glass and see what kind of margins a great many possess.

We have two structures to deal with, gold and enamel. I fear very few come completely up to the enamel, it is so easy to bruise and chip off pieces of enamel. Gold is soft and malleable, while enamel is hard and brittle, and we bruise it. How are we going to have thorough sealing of cavity? It is the most infinitesimal openings through which these micro organisms pass.

Why is it that some of our old soft foil manipulators, with hand pressure, put in fillings which stayed and kept tooth substance? The great power of tin lies in the fact that you can put it so close to the wall of the cavity, that it seals the cavity and does not bruise the walls of same as under the constant hammer and hammer, as is necessary with gold.

Take our rapid operators for example, who put in a very large filling in a very short time. I think it should take half a day to put in such a filling so it will save the tooth. Take this class of fillings, put in in a very short space of time, and examine them in a year or two, or more. Take the fillings out and you will see there is a certain layer of dentine under filling which is devitalized. This comes from the over-packing of gold, excessive hammering. In such cases it is simply a matter of toleration how long that filling will be retained there. We have this tissue, between gold and living tissue, which is dead, and it does not take long for moisture to creep in there and cause further decay.

Gutta-percha, so says Dr. Barrett, but it takes a good amount of skill to put it in. It is also quite porous. Take it out of a cavity, after having been in for a short time, and hold in any flame and you will see it is porous; water will be driven from it. If placed in some essential oil, before applying to cavity, it will exclude moisture to some extent and also aid in sticking and cause it to stay in cavity. It rolls out very readily also. It should be used only as temporary filling.

This talking about perfect fillings—they are perfect enough, but do they seal the cavity perfectly? That is the main point for us to consider. Everybody in these times tries to get hold of some of these golds which are so plastic and easily manipulated. Some of the older members of the profession, when this gold first came in, thought it was a marvel and we would have perfect fillings. After awhile we found these fillings were leaky, and patients came back to me. I just took the privilege of examining around the borders of some of the fillings made here and I found they were very poor; the borders were very poor. If we pack the gold by hand pressure, we must use great force. It is no trick to pack gold in mass, but it takes a good goldsmith to operate along the line of surgery, and we have some of our finest operators along that line. We should stick to fine-pointed instruments around all the borders.

DR. SMITH: Dr. Butler has stated he believes we fail. We are not discussing failures, but perfect fillings. He has said filling teeth was a failure, before, and he said it was due to the fact we did not get hold of the case early enough. What do you mean by that?

DR. BUTLER: If I did make that statement, I state it more emphatically. The smaller the cavity the less deeply we have to go into the tissue, and the better the vitality of tooth. I doubt whether a tooth which is two-thirds gold is going to remain there in as good shape as if it had half the amount of gold, if the pulp is alive. In the first place you have got a larger area of margins to secure and in the second place you have got a larger bulk of gold. I doubt very much if the tooth is as strong in the former case.

DR. COOK: The point which struck me is this—the first cause of decay. Can we make a better tooth by filling than it originally was? If we have a fracture of radius it is not possible to have as good bone there as we had before fracture. Therapeutic measures, which is simply a filling, can be made perfect, and I believe very much in the statement of Dr. Butler, who said that the *tooth itself* did not last over two years. Dr. Black has recently been carrying on some experiments, which I have seen a good deal of, with filling material, and that is in regard to packing amalgam. The ideal filling lays in the plastic operation. We are not doing the gold work that was done by our older

operators. The operation of packing the gold with mallet against the dentine is to my mind a very important one. The bruises to the dentine are also important of consideration.

I had the pleasure some years ago of seeing a filling made by Dr. Holbrook, which had been in there for forty years. The patient was a woman. She had had her teeth filled by modern dentists and had lost all except the one filled with soft gold, forty years ago. You could take the gold and pull it out easily.

In regard to amalgam, I think the failure is in the preparation of cavity, in not getting as perfect a cavity as in the preparation of same for gold. Secondly, do not believe there is one dentist in twenty-five who pack their amalgam into the cavity. I never did it until this spring, and I have been filling teeth for twenty-five years. I experimented on the artificial caries of teeth with fillings and I found that the recurrence of decay of fillings made by different men was nearly the same, very little caries. I have put the teeth into incubator and conducted experiments the same as Dr. Miller has done in his experiments for artificial caries of teeth.

Amalgam, if properly placed in, is a very valuable filling, because there is an antiseptic condition there that prevents the growth of micro-organisms in the mouth, or production of artificial caries. The therapeutic part of amalgam filling has a very important influence, to my mind. Some fifteen or twenty of us packed and filled cavities of teeth, for Dr. Black's experiments on the teeth, as we ordinarily did in practice. Each man putting on amount of pressure as he did in practice; his idea was to find out experimentally the amount of pressure we used in packing cavity. About one and a half pounds was the average pressure put on the fillings. Dr. Black claims it requires about eight pounds pressure to pack a perfect amalgam filling. This is an important thing to my mind and one of the possibilities in making good teeth. And I think that Dr. Black very soon demonstrated that most of those who put in amalgam fillings did not use sufficient pressure.

Dr. —, Grand Rapids, Mich: I have examined the work of a number of dentists in Michigan, and one of the greatest inspirations to me as a young man was in looking over the fillings made by old men. There are fillings in mouths of patients of mine and in that State, that have been there twenty to twenty-

five years. It was my fortune to look over some fillings put in the mouth of a woman, twenty-five years ago by a dentist of Detroit.

DR. LOEFLE: I wish to make one point. The paper, as I understand it, is this. Concerning the possibilities of filling a tooth. Go on this supposition. Supposing we make a filling now which is perfect, restore the tooth and put it in as good condition as it was originally. If this were possible would this insure the tooth against any further decay? I want to put that question. Would that insure the teeth against any further decay? If we could reach that high ideal and give it that protection, would that be as much as we could expect? Decay did start there originally.

DR. SMITH: One is the possibility of saving tooth and the other the art of saving it.

DR. LOEFLE: The point I wish to make is that if we might reach that high degree of skill that Dr. Smith spoke of; if we could reach that skill to make it as approximately as good as that, would that insure the tooth?

DR. SMITH: I purposely avoided discussing failures. I knew every one has them and has his reason for it. To go into discussion of these failures there is no end of them. My aim was the means by which we might attain the highest degree of the art. Has dentistry advanced in the last century? Yes. Judge it by its best operators. If your filling fails, why is it? Have we exhausted the resources of the art? I want you to look at your perfect fillings; why do not they save the teeth? Not the poorer ones. It is a broad subject, and I confined myself principally to the art. If we reach the highest ideal of the art, whether we use gold or amalgam, can we save the teeth?

DR. STEPHAN: I am glad Dr. Smith has mentioned the last point. I think that today we make better fillings than were ever made. These fillings we see to-day are the best of these old operators; we do not see their failures. There are some more rules which have not been touched upon. That is the restoration of contour in bicuspid and molar teeth. I do not think the operator takes enough recognition of this point, so that he will restore the original shape of tooth and also restore interproximal spaces. I do not think we ought to excuse our failures by any lack which we might have in restoring that tooth to its natural shape. How are we sure of that fact? Every man is sure of failure on some work that he has made.

DISCUSSION ON PAPER BY DR. G. W. COOK, "THE EFFECT OF HEAT ON DENTINE."^{**}

DR. KAHLO. In reference to presence of water in tooth structure, I think water exists as free water; if such were not the case how could we explain the fact that after drying out the root canal but a short time elapses until it returns to its natural condition? Water probably influences the toughness and firmness of the tooth. For these reasons I see no objection why it should not be considered as a part of the structure of the tooth. The amount of heat which he uses would only dry out the water in it. He states that 130° C. the three applications of four and one half minutes each would bring about certain destruction of all micro-organisms, and that by raising the temperature a hissing sound is produced from root dryer, say 170°. I should be glad to know how the Doctor determines the temperature of his root dryer. It has always seemed to me that it would be impossible to do any permanent injury to a tooth from the amount of heat which a patient could tolerate in the way of root-dryer.

DR. TAFT. In reference to water in teeth, I understand the essayist to say that all water in a tooth was in combination with other elements. If this were true, bacteria would not proliferate and grow in dentine. By thoroughly drying a tooth from the mouth its weight is somewhat reduced, indicating that there was a removal of some material, and we can hardly imagine that a moderate degree of heat would break up this combination of water with other material. The water of crystallization cannot be so readily removed as this, so that as in all other tissues in the body undoubtedly there is a large amount of water which is not in combination with other material. Two reasons for removing water: 1st. Why necessary to remove it? Moisture should not be permitted to remain in cavity because it would render a filling less perfect than it would otherwise be. What degree of heat? Shall there be a thorough drying or should we simply remove water from surface of cavity? This latter it seems to me is all that is necessary. Some say, introduce the hot air until the dentine assumes a chalky-white appearance, indicating that the water has been removed. When this occurs it is evident that the desiccation has penetrated somewhat the dentine. This is not necessary, and perhaps would be detrimental to the tooth.

^{**}For paper see page 171-1818 Vol. OHIO DENTAL JOURNAL.

DR. HARVEY, of Battle Creek. I would like to ask, what was the maximum temperature of heat applied in these various experiments on teeth?

DR. COOK. The maximum temperature I really experimented with? To go into details of all this work would require hours. I carried the temperature in a number of cases to 200° C., but if the temperature rises or is carried to this degree there is a perceptible contraction in the dental fiber. There is more of a contraction in the direction towards the periphery from the center. Dr. G. V. Black has stated that the contraction takes place between dentine and enamel, and therefore in giving this I simply brought out some of the points which I had arrived at in the experiments in this line. The temperature, I think, if carried to 170° C. for ten minutes, you would find there would be a contraction and weakening of the tooth. I extracted two bicuspid and kept them at body temperature in saliva. I dried out at 170° C. and applied pressure as Dr. Black has done on his teeth. The one which had been subjected to 170° C., 200 pounds pressure, the one which he had at 325 pounds pressure. This shows that there was a weakening in that particular tooth. At 130° C. I detected no difference in the pressure whatever and could determine no difference in the contraction of dentine, as I stated in my paper. The only thing was that the tubuli was cleared out at 135° C. showing that the spaces in tubuli were larger.

DR. KAHLO remarked in regard to experimental work out of the mouth, of course we know that it is done at a great disadvantage. They are not as good as I would like to have them. These teeth extracted fresh from the mouth were furnished me by men who extract. I placed them in an incubator at body temperature and under normal conditions. In the drying out of these teeth it seemed that there was no difference in the resistance from those which were extracted from the mouth and put under pressure and those put to treatment, as paper states. I hope some time to be able to give in detail all the facts of the work and apparatus used. I could get my root-dryer to a certain point, but by raising the heat a little bit we could get the temperature of the point of root-dryer within about \pm° or 5° of what thermometer registered. We could not determine the exact temperature by electricity. In regard to the suggestions made by Dr. Taft I think they were very good. Of course, I did not mean to say

that we must extract too much moisture. I simply gave the figures as they are registered in the May number of the *Dental Review*, in which I gave several experiments, amount of moisture extracted and the exact account of each experiment. It is only supplementary to this paper.

DR. HARVEY. Why I asked this question was the fact that the maximum temperature can be obtained in the mouth is not sufficient in my mind to materially affect in the way of fractured tooth structure. Some nine months ago I had occasion to boil some teeth freshly extracted and examine under the microscope to know what effect boiling had upon tooth structure. We found that there was no material change. There was no fracture detected. It is in the elimination of moisture; we find that it is in nature; it alone brings this change. I do not think it possible to obtain a degree of 170 in the mouth.

DR. COOK. I did not mean to advocate that a tooth should not be dried out. I simply mean to say that a tooth is weakened if we raise it to such a degree. If you place a root-canal dryer in a tooth at 170°C., which I did in a number of cases, the patient will feel it very quickly. I believe in the drying out of a tooth; I have done so ever since I have been in practice, but I will not raise the temperature as high as I have done before. I never allow the hissing sound. When you raise the temperature to a degree of ninety, I think you can thoroughly sterilize and desiccate the tooth without injuring it at all. I do not believe it good to go over 130°, that was the impression I wanted to make. I think the most of those that use heat at all use it at a much greater temperature than is necessary. They could get perhaps as good results at a lower temperature, and it will not conflict with the tooth. Regarding the boiling of teeth: Do not put boiling water in it. It is not a very easy thing to do. The way teeth are treated usually with heat is by a dry process. The drying out of a tooth is of importance and I do that, but I make it as dry as possible.

DR. CLAYTON. I have been for some time past in the habit of raising the heat of my root-dryer higher than I do now. I cannot see but that I accomplish as much as by using a higher degree of heat in the canal.

BRIEFS.

Nickel for Regulating Appliance Nuts.—Nickel cut from a "five-cent piece" is very satisfactory for making "nuts" for regulating appliances.—*Dr. Wesels, Off. & Lab.*

Puncture Root Canal Pellet.—Dr. Codman advocates the puncturing of the pellet with a small needle before driving the pellet to place, in order to permit the escape of the otherwise confined air of the root-canal.—*International.*

Varnish for Cavity.—Dissolve some copal in equal parts of alcohol and chloroform; add one equal volume of hydro-naphthol, and the product will be a very adhesive and strongly antiseptic varnish, free from all caustic properties.

Arsenic in Devitalizing Pulp.—The severe pains accompanying applications of arsenic to the dental pulp may be considerably lessened if an equal amount of antipyrin is used in connection with the arsenical paste. The antipyrin reduces the blood supply and hence prevents the congestion which invariably results from use of arsenic.—*Digest.*

Vertical Pin Teeth the Stronger.—I want to speak of the use of teeth with vertical pins instead of horizontal. I think the former are from four to ten times as strong as the latter. I have noticed that in nine cases out of ten the pins are horizontal. I notice that I have less breakage since I adopted the vertical pins.—*Dr. Thompson, Items.*

Liberal Cutting Essential.—Never fill upon the approximal surfaces without cutting through upon the occlusal and trimming all weak walls that mastication is sure to break away, and when both approximal surfaces are involved to make a triple compound filling. Do not fear the cavities cannot be shaped to hold the filling.—*W. G. A. Bonwill, International.*

Investing Material for Soldering Extensions to Plate Teeth.—Dr. Keyser used asbestos wool moistened with water, as an investing material in soldering extensions to plate teeth. The advantage gained is that the workman has not to wait, as he would have to do, if invested with plaster of Paris and sand; but could proceed to solder at once.—*Office and Laboratory.*

Nickels for Dowels and Posts.—Dr. Keyser said that the best material he had used for dowels, posts, or pivots, was nickel. He obtained this by sawing a strip from a "five-cent piece." This could

afterwards be filed round, square or tapering as suited the case in hand. He found it, for stiffness, equal to indo-platinum wire for the same purpose.—*Off. & Lab.*

Smokers' Teeth.—It has been found that the teeth of smokers are less liable to decay than those of non-smokers, and it has been found by scientific research that *leptothrix buccalis* and the other germs found in the mouth are rendered innocuous by tobacco smoke, and it is an established fact that it also entirely destroys or retards the development of the bacillus of cholera, of anthrax, and of pneumonia.—*Weekly Dentist.*

A Suggestion About Backing Teeth.—If you will let me back the teeth, you may let whoever pleases do the soldering, and I warrant you there will be no cracking. The trouble is, that some practitioners take hold of the pins too near the backing, thus laying too much strain on the porcelain. If, in bending the pins, they took hold of them nearer the ends they would have less cracked porcelain.—*Dr. Holland, Items.*

Emery and Pumice for Finishing Vulcanite Plates.—Dr. Wessels spoke of the advantages of mixing emery with pumice for the purpose of removing the scratches left by the sandpaper preparatory to polishing rubber plates. By mixing this in the proportion of one-half, a smooth surface may soon be obtained. This surface is still farther made smooth with pumice alone, when the plate is finally polished with whiting.—*Dental Office & Lab.*

Hutchinsonian Teeth as a Sign of Congenital Syphilis.—Mr. J. Hutchinson, jr., believes that congenital syphilis is frequently overlooked in young adult patients, because too great importance is attached to the presence or absence of the typical malformation of the teeth and of interstitial keratitis. Probably these symptoms were absent in about 50 per cent. of those who had inherited syphilis and who lived to adult age.—*Brit. Jour. Dent. Sci.*

For Facial Neuralgia.—

R Tinct. aconite root,
 Chloroform,
 Alcohol - - - aa 5 iv.
 Oil peppermint - - 3 i.

M. S. Apply with a camel's hair brush.

—*Dental Review.*

To Make Zinc Flow Freely from the Ladle.—Dr. Trueman stated that when zinc flowed sluggishly from the ladle, the condition could be entirely overcome by using an infinitesimal part of aluminum in the ladle. For this purpose an alloy was first made by adding *one part*

of aluminum to twenty-five parts of zinc. Of this alloy a very small amount is added to the zinc, say one part of the alloy to one hundred parts of zinc, in small quantities at a time.—*Office and Laboratory.*

To Allay Pain After Tooth Extraction.—For the last five years, after every extraction followed by pain, I have wiped out the alveolus with concentrated carbolic acid. For this purpose I wrap a little cotton-wool round the points of a pair of curved tweezers, dip it in acid. carbol. c. p., and wipe out every alveolus properly. The success is almost complete, and pain having lasted for hours is instantly allayed. The patient should rinse the mouth immediately after the alveolus has been wiped out.—*A. Sheuer, Dental Record.*

Creolin in Root Treatment.—Where we have an abscess with fistula, seal the creolin in.

Where we have putrescence in root-canals and no abscess, do not seal it in tightly.

To insure a thoroughly aseptic condition of root-canals, make an application of creolin after removing the devitalizing agent. The roots of such teeth should be filled immediately after the extraction of the pulp.—*F. H. Hartzell, Penn. Dental Journal.*

The Value of Plus Contours.—Until greater contours (what I call "plus contours") are made, no approximal fillings are safe from subsequent caries. This can only be done by taking more time to gain space on interproximal walls, by wedging with gutta-percha for weeks and months, and then, when amalgam is more thoroughly understood, and ability is acquired to pack it, and when gold is used less on all teeth posterior to the cuspids, will there be an advance in this line, more teeth saved, and fewer of the detestable gold crowns and bridges used.—*W. G. A. Bonwill, International.*

Backing Teeth.—In adjusting the backing, be careful to remove any overlap; and, in order to lessen the danger of fracturing the porcelain, take a little piece of gold from among the scraps and place it over pins. Then you can hold the backing in position till the solder flows in. I would like to emphasize the importance of locating the holes properly; if this is not done there is danger of the solder passing through and affecting the tooth detrimentally; but if you have this accurately adapted you have two thicknesses to go through, and, therefore, there is less danger of cracking.—*Dr. Crawford, Items.*

Plaster Models.—In order to produce plaster models which are dense, hard and will remain in perfect continuity when exposed to atmosphere, the Heidelberg Plaster Company has added to the water a liberal

addition of ammonium triboricum. The firm has had this simple method patented in all European countries, and it is claimed that statuary designs made from this composite material endure the abuse of transportation and exposure without damaging the device. Such plaster might be especially serviceable in moulding features to demonstrate the progress of correcting abnormal dental or facial outlines.—*Digest*.

Care in Malleting.—Dr. Codman is opposed to the "hammer hardening" of all fillings, as it is his belief that one reason for marginal leaks is the chipping off of the edges of cavities done in trying to be sure of the tightness of the filling by using small pieces of gold and trying to weld them by repeated small hammer-blows of the mallet. He believes it to be safer practice to condense them sufficiently with the mallet, and then complete the condensation by hand pressure, in a direction at right angles with the first condensation; but if the gold is condensed too much by the mallet, it will not condense well in an opposite direction.—*International*.

How to Manipulate Amalgam and Cement.—Having the cavity prepared, the walls are lined with a sticky mixture of the cement, taking care that it fastens itself well to the tooth. A soft mixture of oxyphosphate and amalgam, not too closely intermingled, and which will be sufficiently adhesive to stick well to the first filling, is then added; lastly the whole is covered with clean amalgam, which will adhere firmly to the second mixture and make a cover to it that will keep out all moisture and preserve the under fillings indefinitely. The materials can all be mixed at one time, the amalgam first, and the operation is not at all difficult to perform.—*J. T. Codman, International*.

Creasoted Charcoal Points for Alveolar Abscess.—Someone suggested to me the use of creasoted charcoal points in cases of alveolar abscess, and stated he had marked success with the method.

I determined to try them, and my first case presented on August 20th. Mr. M., came in with an abscess on left upper lateral; slight pericementitis; no swelling; a mere trace of pus flowing down the root. I put in a creasoted charcoal point after drying out the root-canal and dressing with oil of cassia sealed with chloro-percha and cement. Next day the pericementitis was gone—no pain even on percussion; dismissed for a week; then, the tooth being comfortable, I put in a large gold filling, occupying two hours' time, hand-malleted thoroughly. No pain after the filling was completed; no pain or trouble a week after, and no adverse report so far.—*E. R. Tait, Pac. Med. & Dent. Gaz.*

To Obviate the Necessity of Making a Counter-Die.—Soft pine cut into little blocks are very convenient for use instead of a counter-

die held endwise of the wood over the metal, first laying the piece of the gold over the face of the die. One blow of a good heavy hammer, perhaps three times the weight of an ordinary claw hammer, on this wood will serve as a counter-die. You can get perfect swaging with the wood, as perfect, I think, as a counter-die, and you save fusible metal adhering to the gold. If any fusible metal adheres to the gold you must be very careful to remove it with pumice-stone or in some other way. If you do not, in heating, it will unite with the gold and destroy its usefulness because it is composed of tin, lead and bismuth, and great care must be used. The wood shortens the process one-half.—*G. W. Melotte, Dom. Jour.*

It is the Dentist's Duty to Instruct His Patients.—To take some care for the education of the public generally, and of his patients in particular, in regard to dental and semi-dental medical matters, is undoubtedly the duty of every dental practitioner. It is also in even the material and pecuniary interests of the profession that this duty be not neglected. If, for instance, everybody knew something of the true nature of caries, and of the means that exist for its prevention, arrest, and even cure, they would not only take more care of their teeth, but would also pay more frequent visits to the dentist for treatment and even for advice; instead of waiting until "a bad toothache"—which, by the way, has very often only a remote and indirect connection with the teeth at all—makes them resolve to go and "have it out." The general public are not quite so ignorant on general medical matters as they are in regard to all that concerns our profession.—*Weekly Dentist.*

EDITOR'S NOTES.

Ohio State Dental Society.

THE 32d annual meeting was held at the Great Southern Hotel, Columbus, Dec. 6-7-8, 1898.

It is noticeable that there is an increased attendance each year at the Ohio State Dental Society, and it is gratifying to see so many of the younger members of the profession present. Identifying himself with the society is the best thing a young man can do. It will make him a better dentist if he attends regularly, and the society needs the help of everyone. There is no reason why the Ohio State Society should not at least equal the

best dental societies in the United States, for we have as competent dentists in Ohio as can be found anywhere.

It was unfortunate that the programs were not out earlier than a few days before the time of meeting, but in this instance it was unavoidable. They should, however, be out at least a month before the meeting. This would afford every dentist an opportunity to investigate and prepare for discussion of the subject in hand.

The meeting, nevertheless, was in every way a success, barring an unfortunate accident in the clinic room, the explosion of a gasoline blow-pipe apparatus, by which Dr. J. B. Beaman was severely burned about the arms and hands, and Dr. L. E. Custer suffered a burned hand and fingers.

The papers and clinics were good and the meeting a pleasant and profitable one.

Messrs. Fore and Kinney, proprietors of the Great Southern Hotel, deserve great credit for the excellent service rendered and the pains they took to supply everything needed, and we believe we voice the sentiment of all present when we say this attention was duly appreciated.

New Publications.

A STANDARD DICTIONARY OF THE ENGLISH LANGUAGE. Students' edition. Abridged from Funk & Wagnalls Standard Dictionary of the English Language, by James C. Fernald. New York: Funk & Wagnalls Co., publishers, 1898. Price, \$2.50.

This work is designed to give the orthography, pronunciation, meaning, and etymology of over 60,000 words and phrases in speech and literature of the English speaking people, with synonyms and antonyms. It contains also, an appendix of proper names, foreign phrases, faulty diction, disputed pronunciations, abbreviations, etc.

The dictionary is illustrated with over twelve hundred engravings and contains much information of an encyclopedic character. The size of the book is very convenient for table or desk, and for ordinary needs it answers all purposes. It has the same excellent arrangement as the large Standard Dictionary, and is

the best and most complete abridged dictionary with which we are acquainted. It is not only valuable for the student but for everybody, even those who already have the unabridged dictionary will find this one a very handy and useful adjunct to the home library. It is just the book for the office and we take pleasure in recommending it to everyone who wants a good dictionary.

SOCIETIES.

Ohio State Dental Society.

At the meeting of this society, held in December, the following officers were elected for 1899:

President, Dr. L. P. Bethel, Kent; First Vice President, Dr. L. L. Barber, Toledo; Second-Vice President, Dr. H. F. Harvey, Cleveland; Secretary, Dr. S. D. Ruggles, Portsmouth; Treasurer, Dr. C. I. Keely, Hamilton.

Board of Directors (Three Years).—Dr. C. R. Butler, Dr. A. E. McConkey, Dr. W. H. Hersh, Dr. J. F. Stephan.

Executive Committee.—Dr. Henry Barnes, chairman, Cleveland; Dr. J. A. Stipp, Toledo; Dr. H. T. Smith, Cincinnati; Dr. W. T. Born, Kenton.

Clinic Committee.—Dr. G. H. Wilson, chairman, Cleveland; Dr. J. K. Douglas, Sandusky; Dr. P. S. Bollinger, Dayton; Dr. W. S. Locke, Cincinnati.

Arrangement Committee.—Dr. W. H. Todd, Columbus.

Publication Committee.—Dr. W. T. McLean, Cincinnati; Dr. C. A. Hawley, Columbus; Dr. J. K. Smith, Zanesville.

Membership Committee.—Dr. J. R. Callahan, Dr. O. N. Heise, Dr. Grant Molyneaux, Dr. E. D. Scheble.

Wisconsin State Board of Dental Examiners.

THE next meeting for examination will be held in Milwaukee at Hotel Pfister, on Tuesday, January 17th, 1899, at 9 A. M.

W. H. CARSON, *Sec'y.*

Southern Branch of the National Dental Association.

THE Southern Branch of the National Dental Association, by invitation of the Louisiana State Dental Society, will hold its second annual meeting in New Orleans, La., Feb. 9, 10, 11 and 13, 1899, the following day is Mardi Gras. Circulars will be issued later giving details as to railroad and hotel rates, etc. All members of the National Dental Association and the American Medical Association are cordially invited as guests of the Southern Branch.

WM. ERNEST WALKER,
President Southern Branch N. D. A.

Chicago Dental Society.

THE Chicago Dental Society will, on Friday and Saturday, February 3rd and 4th, celebrate its thirty-fifth anniversary by holding a two day meeting for clinics, papers and discussions, ending with a banquet Saturday night. A cordial invitation is extended to the profession to be present.

Printed programmes will be ready in January and may be had upon application.

JOSEPH W. WASSALL, Sec'y, Com. of Arrangements.

OUR AFTERMATH.

GOLDEN WEDDING ANNIVERSARY.—The fiftieth anniversary of the marriage of Dr. and Mrs. L. P. Haskell was celebrated December 13th, 1898. Their home at 139 Fifth Street, Hinsdale, Illinois, was thronged the entire evening with friends desirous to offer congratulations in person, while many absent ones sent letters with best wishes. Many beautiful and appropriate gifts were received. An appropriate and witty speech by Hon. R. A. Childs, and poems written for the occasion by Mr. A. E. Walker and Dr. C. N. Johnson, added much to the pleasure of the occasion.

The OHIO JOURNAL, who considers Dr. Haskell one of its best friends, would be foremost in wishing him and Mrs. Haskell many years of unalloyed happiness.

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CONTRIBUTIONS.

Dental Schools Abroad.

BY H. L. AMBLER, M.D., D.D.S., CLEVELAND, OHIO.

Continued from page 9.

AMONG the oldest bequests in London charities, is one which provides for the care of the teeth of twenty-eight hundred poor people yearly.

Very recently a novel bequest was made to be used to pay for the proper care of the teeth of school children in a certain village in England, in cases where the parents could not afford to meet the expense.

We present a picture of a large London dental advertising establishment, located near St. Paul's church, on twenty-seven windows appear signs, viz.: Goodman, surgeon dentist; teeth, complete set one guinea; painless gas extraction, five shillings; single tooth, 2s. 6d.; five years warranty. Prize medal teeth; revolution in dentistry. Pamphlet post free.

Several places in England, on the fence or side of a building, we saw large boards, with sign, viz.: "To those who have old false teeth—We buy old false teeth and send the utmost value in return. Address, —."

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

In London we saw over doors or windows of places: Civil Service Teeth Institute. American Teeth Institute.

Claudius Ash & Sons have in connection with their dental depot, a circulating library, composed of all books upon dentistry. The minimum charge is five dollars per annum, and a subscriber may retain a book for above time.

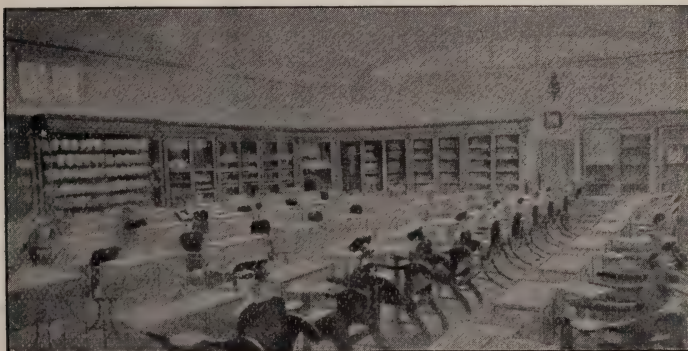


ADVERTISING DENTISTS, LONDON.

The Dental School of Paris, of which we present pictures of the operating room and laboratory, is located at 45 Rue la Tour-d'Auvergne, and was opened in 1880. It has outgrown its quarters twice, and is now in a new building, well equipped and lighted. The session opens the first Monday in November, and closes with June. The lectures, on theory, are given from eight to ten p. m. In the printed list of the faculty, if any member has a decoration from any society—Legion of Honor, for instance—a facsimile of such decoration is placed immediately after his name.

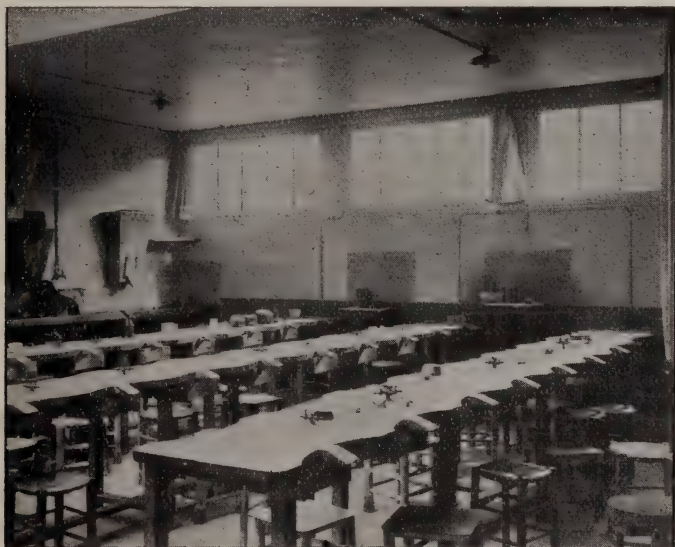
Out of sixteen professors, nine graduated in dentistry at this

school. There are several M.D.'s in the faculty, who lecture on medical and surgical subjects.



OPERATING ROOM.

Conditions for admission: (1). Students having a State diploma. (2). Practitioners who have a legal right to practice in France or abroad, or who have a medical or dental title. (3). Candidates must be at least seventeen years of age. (4). Stu



DENTAL LABORATORY.

dents from recognized dental schools are allowed to enter the second or third year, according to the progress they have made. The course lasts for three years; fee, two hundred and forty dollars, with eighteen dollars additional for hospital practice and study. Examinations are public, and some of them are held before a jury composed of the school professors and a member of "la commission scholarie." The graduate also prepares a thesis. The title conferred is D.E.D.P. (Diplômé de l'Ecole dentaire de Paris); it is claimed that this is equal to D.D.S., or L.D.S., given by the American or English schools. The graduate must have been three years in a dental office, or three years in the laboratory of the school, in addition to his regular course. Clinics every day from 8 to 11 A. M., and around the operating room there are cases which contain a very good museum. The dispensary is partly gratuitous. Students have an excellent opportunity to treat the



A CORNER IN THE OPERATING ROOM.

dental system of the public school children, as they are so authorized by the Préfect of the Seine.

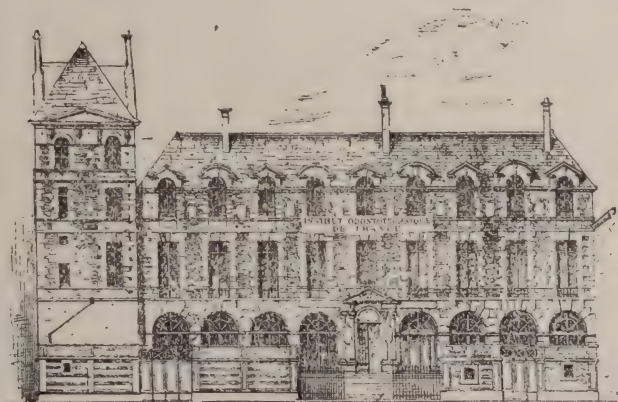
Several prizes are given to students, in the form of money, or scholarships to the needy. Students promise, in writing, to observe dental ethics, also agree not to advertise.

Dental services are provided for in several hospitals, where

dental students do more or less work; dissection is obligatory.

This school has a superior, or fourth year course, fees one hundred dollars, for practical instruction in operative and prosthetic dentistry. To enter, one must have a dental diploma from a recognized school, or a medical diploma, either French or foreign. A special diploma is given at the close. There is also a special course in mechanical dentistry, lasting two years, of eight months each, at twenty dollars per year. To enter, the would-be student must be at least sixteen years old, and have a certificate showing he has passed primary studies and been apprenticed to a dentist for three years. At the close he obtains a certificate as mechanical dentist. This school only gives in their catalogue the names of past graduates, of whom, for 1895-6, there were twenty one. Nearly all of the students are from France, a number of ladies being among them, as many as four some years, including both single and married.

Among the text-books we noted Tome's, Cole's, Thomas, Magitot, and some translations from portions of American authors. This school has a liberal or complimentary course of three months, fees sixty dollars, to which students of all nationalities are admitted, if they have a legal right to practice in their own country. To enter, they do not have to pass an examination, neither do they, at the close, receive the diploma of the school.



ECOLE ODONTOTECHNIQUE, PARIS.

The other dental college in Paris, of which we present a picture, is located at 3 Rue de l'Abbaye, and is called the École

Odontotechnique. It was opened in 1879. Yearly session begins the first Monday in November, and closes July first. The course lasts three years; fee, \$246.00. Clinics from 8 to 10 A.M., and 2 to 6 P.M., every day except Sundays and fête-days. Consultations and simple operations free for the poor; where special operations are required, or where precious metals are used, the patient must have a card from a donor to the school. In the clinics no language but French is permitted. A course of dissection is obligatory. In order to be admitted, the candidate must be seventeen years of age and possess a good moral character; the other conditions are similar to those of the other Paris school. Graduates in medicine can enter the third year and at the end obtain a diploma, but any graduate must be at least twenty years old.

Dr. Spaulding, an American, who has been for many years in Paris, is among those in the special course on gold filling.

Bacteriology is taught in both of the Paris schools.

It is the custom in all foreign dental schools to give several prizes, consisting of scholarships, medals, honorable mention, and money; they are given by professors, donors, subscribers, and dental dépôts.

A committee of French dentists has been organized to prepare for an international dental congress, to be held in Paris during the exposition of 1900.

Two of the dental journals published in Paris are largely under the auspices of the dental schools. Among the the collaborators is Dr. Michael, of Paris, the dentist who makes metal appliances for keeping parts of the body in shape, where bone has been removed, until new bone has been formed. Among the foreign contributors are Cunningham, England; Harlan, Chicago; Walker, N. Y.

The *Revue Odontologique*, for July, 1898, quotes seven pages from the February, 1898, OHIO DENTAL JOURNAL, on cataphoresis.

There is considerable dental advertising done in Paris, and some of the establishments are of liberal proportions; circulars are freely distributed on the street, and they seem to be about the same as found elsewhere, except that some of them offer the credit (installment) plan.

The Glasgow Dental Hospital, St. Vincent street, founded 1885, is located on the fourth floor of an unpretentious four story

brick building, and as there is no elevator (or lift, as they are called abroad) the ascent is by a well worn stone staircase to a few rooms which are somewhat ancient in appearance and appliances. The operating room and laboratory occupy most of the space; the former is furnished with common operating chairs which have strong wooden seats and backs, this style of chair is very economical and sanitary, and is seen in all of the older hospitals, and in some of the more modern, it has very few movements, and a wooden head-rest covered with leather; similar chairs are on sale at some of the foreign dental depots. About five thousand patients were treated during the past year, and the income exceeded the expenditure. In the list of hospitals and colleges recognized by the Royal College of Surgeons, England, we failed to find this one.

In the National Gallery, London, there is a portrait of Joseph Grimaldi, the celebrated pantomimist, who was born in London, and appeared on the stage when two years old. His father was a native of Genoa, and came to England as dentist to Queen Charlotte.

At Kensington Museum, London, there is a display of comparative anatomy; human teeth are classified as incisors, canines, pre-molars, and molars; in most of the specimens the outer plate of the jaw has been removed, thus showing the teeth in situ. Here we saw a case of pulp nodules in a lower tooth (which had been sawed in two) of a sperm whale; also skulls of ancient Britons (dredged from the Thames) and skulls of Greeks, Etruscans, Cyprian, Spanish, Russian, Hindu, Persian, Mussulman, Punjabi, Singhalese, Egyptian, Abyssinian, Japanese, Chinese, Burman, Malay, Dyak, Maori, Laplander, Eskimo, Vancouver, Sioux Indian, Mexican, etc. Here is an hideous head carved from stone, with pieces of bone made to resemble the incisor teeth inserted between the lips; a full size skull made of rock-crystal, is from Mexico, and also a mask formed of part of a human skull incrusting with obsidian and turquoise, with glaring eyeballs of polished iron pyrites surrounded with circles of white shell; the teeth in situ, except the superior incisors. A very large portion of comparative dental anatomy has been moved to the above museum, from the British Museum, at the latter we had an opportunity to examine a skull from Alacames, Ecuador; in the labial surface of three incisors, and the buccal surface of three bicus-

pids, small round shallow cavities had been made, which were filled with disks of gold cemented in, all this for beauty's sake. The incisive edge of two of the incisors had been worn down so as to force out the gold, but some cement still remained.

In Shakespeare's library, Stratford-on-Avon, we saw the skull used by Mr. Kemble, the actor, when playing Hamlet; this skull is shown (figures) in the portrait of Kemble painted by Sir Thomas Lawrence.

In the museum at the battle-field of Waterloo, there is a left malar bone with a bullet firmly embedded in it.

The Museum of Natural History, in the Jardin des Plantes, Paris, is housed in a large new building; the collection and arrangement is one of, if not the finest in the world. Here we saw Malay and Javanese skulls containing teeth which the living subject had dyed black, to increase their beauty. In the museum of the Palace Trocadero, Paris, there is a male mummy, taken from an artificial grotto in the mountains of Grand Piedra, near Chachapoyas, department of the Amazon, South America, which has thirty-two good teeth.

In the Museum of Dupuytren, Paris, there is a skeleton of a humpback with a complete denture of good-looking teeth, also many specimens of phosphor necrosis, nearly all of which are confined to the inferior maxilla; several skulls and wax models showing cleft palate; specimens of exostosis and hypercementosis of the jaws and teeth; syphilitic jaws and crania; ankylosis of the jaws, and a great variety of fractures; carious jaws and tumors. This is a very old and wonderful museum and contains specimens of rich value.

The Museum of Orfila, Paris, contains remarkable preparations, preserved in alcohol, of the nervous, arterial, and venous system of the head, face, and teeth; also model of a tumor, of the maxillary sinus, containing teeth, and a curiosity in shape of round table top made of different bones and pieces of embalmed soft tissue, such as ears, noses, etc. Thousands of other interesting specimens can be seen, the like of which are *very* seldom found.

Method of Pulp Extirpation at One Sitting.

BY W. T. McLEAN M.D., D.D.S., CINCINNATI.

TAKE, for instance, a molar tooth with exposed pulp. The tooth having rubber dam applied and entirely isolated from adjoining teeth, they being protected by a rope of absorbent cotton applied around the tooth being operated upon. Debris from cavity and carious tooth structure is removed sufficiently to permit of direct access to the exposed pulp. The chlorid of ethyl spray is now used, preceded by a few crystals of eucain moistened and gently laid upon the exposed pulp, covered with a small pellet of cotton, after which there is placed upon the cotton a piece of spunk, nicely fitted, so as to exclude the spray upon its being first applied, for, if it were permitted to come in direct contact with the pulp, it would cause severe pain and shock. After being thus protected, the spray is now directed upon the spunk and in one or two minutes it is gently removed, and the spray permitted to play upon the cotton. The eucain crystals by this time have dissolved sufficiently to anesthetize the pulp superficially, and the cotton can now be removed and the spray permitted to come in direct contact with the pulp. The flexible yet rigid broach (unbreakable) is now used to remove the hard pulp, and it is dug out in a few minutes, not exceeding fifteen. When the pulp is entirely removed, the tooth is permitted to remain open five or ten minutes, then hot air is injected into the pulp canal, wiped out with oil of cassia, filled with cotton and hermetically sealed with phosphate of zinc cement, patient dismissed and invited to return for permanent filling in 48 hours. The permanent filling of canals and tooth is subject to the desire and individual selection of the dentist.

Are Dentists a Set of Enthusiasts?*

BY FRANK W. SAGE, D.D.S., CINCINNATI, O.

THIS question is asked in no caviling spirit. It is not intended to convey an impression of an uncomplimentary estimate of the profession, individually or collectively. A certain degree of enthusiasm is not only recognized as commendable in the dentist or in a body of dentists, but is held to be a requisite to progress. The inquiry which it is proposed to make is this: Does the history of the profession's researches within the last quarter of a century, show consistent adherence to scientific principles and methods, in examining, testing, and adopting new methods and instrumentalities in dental practice? In other words, have we in these matters named, reasoned legitimately from cause to effect (by analogy or otherwise), in trying to assign to them their proper value, or have we occasionally jumped to conclusions, accepting someone else's dictum, instead of exercising our own individual judgment?

Undoubtedly there has been exhibited a blind, unreasoning enthusiasm, of which we have been wholly unconscious. It is not because such enthusiasm leads inevitably to error, that the fact requires to be expressly mentioned, but because it *may* lead to error.

The agony which *most frequently stirs up* a form of enthusiasm calculated to make the dentist or a body of dentists lose their heads takes on the form of a man. It is not usually—probably never—the man who has an axe to grind. (At least not as regards the dental assembly). The individual *dentist's* nose may fail, but the nose of the body collective of dentists, catches the faintest whiff of the wolf in sheep's clothing. No, the man who lays a spell upon us is probably innocent of any such design; is thoroughly sincere in his purpose of helping the profession, unselfish, and himself burning with enthusiasm. Add to these the quality of personal magnetism, and you have a man innocently and ignorantly dangerous to the last degree, when allowed free rein in a dental convention. Especially so if he be himself rather credulous, self assertive and positive.

*Read before the Ohio State Dental Society, December, 1898.

It may be of interest to pass in retrospect some of the "crazes," which within a few years have gained a more or less secure foothold in the profession. Not so many years ago the lacto phosphate of lime treatment for exposed tooth-pulps was discussed in dental conventions far and near, stirring up a genuine sensation. It was proposed to apply a magma composed of phosphate of calcium and lactic acid to the pulp, protecting this with a temporary filling; the object being to induce the pulp to appropriate the pabulum thus offered, and in time transform it into a shield. Or perhaps it was a process of catalysis which was looked for, the writer is not sure.

As a sensation this was all very interesting. We can even afford to laugh a little at our credulity, at this late day. The question, however, arises, where were the men, all this time, who should have pointed out the physiological absurdity of presuming that the pulp would lend itself for a special occasion, to perform a function wholly alien to its structure and organization? It would seem at least, that attention should have been called to the necessity of the pabulum's being exhibited through the usual channels whereby the appropriation and assimilation of inorganic matter is sought. But, no. Or if, at least, anything of the sort was urged, it was not effective as a plea in deterring many from experimenting along the line of treatment suggested.

Later came the implantation doctrine, founded on two assumptions, bold to the point of sublimity. The first was, that the periosteum of almost any old extracted tooth-root, is capable of being revived, provided it—the root—be restored to something like its original environments. The second was, that the artificial socket drilled in the maxilla, would take on all necessary physiological functions for restoring the root inserted to pristine usefulness. The singular and highly interesting feature attending both this operation and the other we have named, is that a rather specious semblance of the genuine phenomenon sought for, actually takes place, many times; the tooth pulp becomes covered with a horny shield; the implanted tooth becomes firmly fixed in its new socket. But in both instances the effect is rather casual, than the logical result of practically applying scientific theory. A quasi scientific savor hangs about such operations as these, which may continue to beguile and begot men who will not take the trouble to do their own thinking, long after more thoughtful men have given over the fallacy.

Set over against this too credulous disposition in dentists, and strongly contrasting with it, is seen occasionally an unwillingness to accept on valid evidence, what seems to be really a good thing. There is sometimes a total lack of enthusiasm, which is quite as remarkable and is often more unaccountable than over enthusiasm at another time. Such, for instance, was the reception accorded the so called Herbst method of filling teeth, a few years ago. Here was a method of filling not an experiment, but a thoroughly well-tried system, which promised and indeed fulfilled its promise of accomplishing gold-filling of cavities more readily, more expeditiously, with less effort on the operator's part, with less of an infliction on the patient, than the methods generally in vogue among the dentists of the United States. It was claimed that a tighter filling could be made by this method than with the mallet and pluggers, and in from three fourths to one-half less time. The method was considered of enough importance to be fully described and illustrated in the American System of Dentistry, as the three large volumes, issued about that time, were called. But the method never came into general vogue. The singular thing about it all is, that you can seldom get out of any man who formerly used it, why he abandoned the Herbst method of filling.

The day of enthusiasts is not yet over. Just now it seems to be the new amalgam. We are unable to learn positively who vouches for its being the *only* amalgam; the story is that either the American Dental Association or a Tri-State Association stands sponsor for it. Nobody seems to know positively. But it is "in the air" that this amalgam has never had anything like an equal, and men are emptying their old amalgams into the ash-pan.

Now comes a belated statement that the formula for this amalgam is within a very slight fraction of being identical with that of another well-known amalgam, for years upon the market, devised by the well-esteemed author of the "New Departure" ideas.

So we go. Perhaps after all the inquiry we need to make is not, "are dentists a set of enthusiasts," but, are dentists a set of dupes?

Proceedings of the Cincinnati Academy of Dentistry.

Toothache, and How it was Treated in 1772.

BY WALTER P. STEWART, D.D.S.

MY great-grandfather was a physician of the old school, and I am fortunate in being the possessor of two of his books.

In the front of the first is written in ink, now dim and yellow, "Dr. Joseph Powell, his book, 1772," and on the title page we see the name of the author "William Buchan, M.D," and the name of the printer "John Dunlop, Market St., nearly opposite the London Coffee House, Philadelphia, 1772."

In looking over this old volume, yellow, with age, the old-fashioned long s is liable to make us call a "case" a "cafe," and commit like blunders.

After glancing idly over more than half the book and reading methods of preventing and curing different diseases (and the chief remedy for all things is bleeding). I reach page 249 and see the heading "Of the toothache." I am all attention, and the following is what I read:

"This disease is so well known, that it needs no description. It has great affinity with the rheumatism, and often succeeds pain of the shoulders and other joints.

"It may proceed from various causes, as obstructed perspiration, a catching cold; or from any of the common causes of inflammation. I have often known the toothache occasioned by neglecting some parts of the usual coverings of the head, by sitting with the head bare near an open window, or its being anyhow exposed to a draught of cold air. Food or drink taken either too hot or too cold, is very hurtful to the teeth. Great quantities of sugar or other sweet-meats are likewise hurtful. Nothing is more destructive to the teeth than cracking nuts, a chewing any kind of hard substances. Picking the teeth with pins, needles, or with anything that may hurt the enamel with which they are covered, does great mischief; as the tooth is sure to be spoilt whenever the air gets into it. Pregnant women are very subject to the toothache, especially during the first three or four months of pregnancy. The prominent or immediate cause of the toothache is a rotten or carious tooth.

"In order to relieve the toothache we must endeavor to draw off or divert the humors from the part affected. This may be done by mild purgatives, bleeding and bathing the feet frequently in warm water. The perspiration ought likewise to be promoted by drinking freely of weak wine whey, or other diluting liquors, with small doses of nitre. Vomits too have often an exceeding good effect on the toothache. It is seldom safe to administer opiates, or any kind of heating medicines, or even to draw a tooth till proper excavations have been practiced, and these alone will often affect the cure.

"Next to excavations we recommend fomenting the parts with warm water. Bags filled with boiled camomile flowers, flowers of elder, or the like, may be applied to the parts affected, with as great a degree of warmth as the patient can bear, and renewed as they grow cold. The patient may likewise receive the steams of warm water into his mouth through an inverted funnel, or by holding the head over the mouth of a porringer filled with warm water, etc.

"Gargles are likewise of use to make a discharge from the part. Rot of elder dissolved in small tin makes a very proper gargle, or an infusion of sage or mulberry leaves.

"Such things as promote the discharge of saliva, or cause the patient to spit, are always proper. For this purpose, bitter, hot, or pungent vegetables may be chewed, as calamus, aromaticus, etc.

Many other herbs, roots and seeds, etc. are recommended for curing the toothache, as the leaves or roots of milleferl or yarrow chewed, tobacco smoked and chewed, etc. These bitter, hot and pungent things, by occasioning a great flow of saliva, frequently give ease in the toothache.

"Opiates often relieve the toothache. For this purpose a little cotton wet with laudanum may be held between the teeth, or a piece of sticking plaster about the bigness of a sixpence, with a bit of opium in the middle of it, of a size not to prevent the sticking of the other, may be placed on the temporal artery, where the sensation is most sensible. De la Motte affirms, that there are few cases wherein this will not give relief. If there be a hollow tooth, a small pill made of equal quantities of camphor and opium, put into the hollow is often beneficial. When this cannot be had, the hollow tooth may be filled with gum mastick,

wax, lead, or any substance that will stick to it, and keep the external air out.

"Few applications give more relief in the toothache than blistering plasters. These may be applied betwixt the shoulders, but they have the best effect when put behind the ears, and made so large as to cover a part of the lower jaw. Burning the nerve within the affected tooth with a hot iron, has frequently given ease, but this operation ought to be done with care. Applying a hot iron to what is called *the inner bar of the ear*, is likewise a noted cure for the toothache. Blistering however, is more safe than either of these, and is not less efficacious.

"Hoffman says, 'When everything else failed, that he had often great success with the following pills: Take of aromatic pill one dram, storax pill half a dram, extract of saffron six grains. Make them into nine pills; of which six or eight are to be taken at bed time for a dose.'

"After all, when a tooth is carious, it is often impossible to remove the pain, without drawing the tooth; and as a spoilt tooth never becomes sound again, it is prudent to draw it soon, lest it should affect the rest. Tooth drawing, like bleeding is very much practised by mechanics as well as persons of the medical profession. The operation however is not without danger, and ought always to be done with care. A person unacquainted with the structure of the parts, will be in danger of breaking the jaw-bone, or of drawing a sound tooth instead of a rotten one, etc.

"When a sound tooth has been drawn, if it be replaced immediately it will grow in again. It is now a common practise to draw a rotten tooth, and put a sound one, taken from the mouth of some other person, in its place. It is likewise an easy matter to fix artificial teeth so neatly, as to answer most the purposes of the natural.

"When the toothache returns periodically, and the pain chiefly affects the gums, it may be cured by the bark.

"Some pretend to have found great benefit in the toothache from the application of an artificial magnet to the affected tooth. We shall not attempt to account for its mode of operation; but, if it were found to answer, though only in particular cases, it certainly deserves a trial, as it is attended with no expense and cannot do any harm.

"Persons who have returns of the toothache at certain seasons, as spring and autumn, might often prevent it by taking a dose of physic at these times.

"Keeping the teeth clean has no doubt a tendency to prevent the toothache. The best method of doing this is to wash them daily with salt and water, or with cold water alone. All brushing and scraping of the teeth is dangerous, and, unless it is performed with great care, must do mischief."

So endeth the chapter "Of the toothache." Surely dentistry has made some strides in one hundred and twenty-six years.

DISCUSSION.

DR. McLEAN: There is no doubt in my mind as to this being about the way teeth were treated one hundred years ago, and the present members of the dental profession should feel highly elated, that they can alleviate the pain and sufferings of mankind by their skillful, scientific and manipulative ability.

DR. RAUGH: One point rather appealed to me, and that was with reference to the extraction of carious teeth and replacing them by others. The question is, how far has dentistry advanced since that time in the matter of implantation and replantation? It is an operation which, to my mind, has not been very successful, and at the same time one hundred years ago they had done this work, and probably it was successfully accomplished too.

Some mirth was created with reference to the application of plasters, etc. This is not so much of a joke, because in violent odontalgia these plasters applied behind the ear and even to other parts of the body, prove very efficacious. In abscesses of the alveolus, hot foot baths form a very good method of treatment. Also the use of morphin, or other opiates which cause sleep, will do a great deal of good.

DR. GENSLEY: With reference to abscesses, there is no question, in my mind, but what a devitalized tooth abscessing sooner or later, the root canals having been filled, is caused by some morbid condition of the entire system.

DR. McLEAN: A lessened systemic condition of the body will produce an alveolar abscess, but I think it is a far-fetched theory with reference to the use of warm foot baths for the treatment of this condition. The result secured by a foot bath is not sufficient to retard the circulation, and when you have an

abscess you have pus formation producing the pain, and the relaxation resulting from a foot bath would not be sufficient to relieve the pressure and pain. Probably a Turkish bath would relieve it. The blood supply to the brain would be lessened for a short period by this method of treatment, but not sufficiently long I think. Where pus is formed there is pressure enough to elevate the teeth, and owing to the fact that it is surrounded by osseous structure it is not possible for it to receive systemic treatment to relieve the pain. When you have pressure,—the first stage of the production of an alveolar abscess—there is the greatest pain; when pus is formed the pain is lessened on account of the disconnection of the sensory nerve supplying the tooth. I think the systemic condition of patients may be such owing to an alveolar abscess, that a foot bath would have some effect systematically, but not so much as to relieve the condition.

CASES IN PRACTICE.

DR. GENSLEY: A year ago a patient came to me who wore a full upper denture, which she had had made about a year previously at one of the "parlors" here, and when I saw her that tooth (*the tooth being passed to the gentlemen present for inspection*) was just beginning to show through the gum on the upper left side. I told her at the time that it was not far enough erupted to be easy of extraction and advised her to let it go until it interfered with the plate. About a month ago she said it was interfering with the plate and so I extracted the tooth. I found it an angle of 45 degrees. It is a well developed cuspid, and worn a little by the plate. She said all her teeth were taken out before the plate was made. Whether this was an unerupted cuspid of the second dentition, a supernumerary cuspid or a cuspid of the third dentition I am unable to say.

DR. RAUGH: I have never heard of an authenticated case of third dentition.

DR. VAN KIRK: I think it was a case of retarded dentition. A lady patient of mine, sixty years of age has a cuspid about one half erupted now.

DR. McLEAN: I would say that this was an impacted cuspid of the second dentition, the eruption of which was delayed. You seldom see any supernumerary anterior teeth excepting it be those which are retarded in this way or those which are noticeable as

compared with the properly erupted teeth. One patient of mine has but three lower incisors and another patient has three bicuspid on one side and one on the upper jaw. Another patient has two molars on the left and three on the right. She has four molar teeth on the right side and two on the other. These things appear quite frequently.

DR. RAUGH: I have only one family in which I can trace back where the left lateral has been wanting for several generations.

DR. MCLEAN: I have an elderly lady patient who has supernumerary cuspid. There are two cuspid teeth in place of the first bicuspid, on the upper left side. These anomalies are frequent; they are not particularly interesting any more since dentists have seen so many of them. In this case of Dr. Gensley's I think you would not find it a supernumerary tooth because it is shaped like a normal cuspid.

Dental Nomenclature.*

BY S. D. RUGGLES, D.D.S., PORTSMOUTH, OHIO.

THE substance of this article is taken from reports on nomenclature from several sources and is not the result of original work. The subject was suggested by a leading member of our society as one of great importance and one sadly neglected by even the most active workers in the dental profession.

While examining reports a very interesting pamphlet containing exactly the points wanted, was discovered, and through the kindness of Dr. Black permission was given to have it reprinted and distributed among the members of this society.

The history of dental nomenclature is much the same as that of other sciences, simple in the beginning, it gradually became more complex as advancement was made. In the early growth of any science the nomenclature is the product of a few individuals working along the lines in which they are most interested, and as new writers enter the field new words are coined. This makes it practically impossible to adopt a definite and unchangeable system so long as progress is being made.

* Read at Ohio State Dental Society, December, 1898.

The original nomenclature of botany and zoology was derived entirely from the Latin language or Latinized vernacular words. This is also the case with medicine, which at present has no fixed form.

The vernacular forms of speech are ever on the increase and are to a great degree the cause of much repetition of technical terms. It is impossible to adopt any one language to this work. For instance, if the Latin language were used, we have words without Latin equivalents, such as jaw, root, enamel, etc., and others that have been so thoroughly established by usage by our best authors that it would be very unwise to attempt it.

What we need most is not a vast number of new terms, but to make ourselves familiar with the best ones already in use—systematize it, if you please. After this has been done, a combined effort should be made by all editors of dental journals to conform to the nomenclature adopted, and not use so many terms supposed to have the same meaning. This is the source of a great deal of our trouble.

It is a very common sight in dental societies for a member to resort to a black-board in order to make clear some minor point, such as the position or location on a given surface. We should be able to express our ideas accurately and in a concise manner, in a way in which our hearers will understand as well as ourselves.

So much attention is given operative dentistry that a definite plan for naming the surfaces of teeth and the different parts of cavities is of the utmost importance. This system should be one that could become international if possible, and if not possible, let it be national, so that a person reading a paper before a society other than the one to which he is a member will have some assurance that his efforts and ideas are not misinterpreted.

The object of this paper is not to suggest new terms but to urge the adoption of that system reported at the World's Columbian Dental Congress which met in Chicago in 1893. From this a partial system, composed of thirteen nouns and ten adjectives, was selected by Dr. G. V. Black as being the most suitable names for the surfaces of teeth, cavities and parts of cavities. This group of twenty-three words constitutes by far the greatest number of technical expressions used by dentists, and are practically the same in English, French and German. This gives in reality an international nomenclature. The nouns are names with which

we are all familiar, though perhaps not from a technical standpoint. This is also true with the adjectives.

In order that all may see I have written the entire list upon the board and will try to demonstrate as far as possible the use of those with which you are not so apt to be familiar.

As the blackboard space was limited I have taken the ten adjectives and only three of the nouns to demonstrate the system.

There are five surfaces to all teeth, whether posterior or anterior, and are named according their relative position to the other parts of the mouth. Take as an example the lower left first molar (referring to figure 1). Consider the crown as a cube with the angles more or less rounded; the surface next to the tongue is called the lingual surface, that next to the cheek the buccal surface, that surface away from the median line following the curvature of the arch the distal surface, that toward the median line the mesial surface, while the surface in contact with the opposing teeth is the occlusal surface. This is true with the posterior teeth, while with the anterior teeth incisal edge takes the place of occlusal, and labial the place of buccal, as we have here lips instead of the cheek.

The axial surface of a tooth is that surface parallel with the long axis of the tooth, and each tooth has four axial surfaces—mesal, distal, buccal and lingual.

The proximate surface is that surface that lies next to an adjoining tooth, but otherwise designates no particular one of such surfaces. It is very important that the V-shaped space formed by these surfaces should be maintained. This is the interproximate space.

This same nomenclature applies to the naming of cavities and parts of cavities. For instance, a cavity on the occlusal surface would be termed an occlusal cavity, while if it extended onto the mesial surface also it would be a mesio-occlusal cavity.

The walls of cavities are named according to the surfaces upon which they open or are situated, regardless of the outline of the cavity. In a mesio-occlusal cavity of a molar, we have the lingual wall next to the tongue, the buccal wall next to the cheek, the axial wall parallel with the axial surface upon which the cavity is located, while the wall toward the gum is called the gingival wall.

That wall of occlusal cavities that is next the pulp is called the pulpal wall.

When speaking of the walls of cavities you include both dentin and enamel, while in the term margin, enamel only is implied.

A few words on angles will be sufficient. We have two kinds of angles—line and point angles. Two surfaces are required to form a line angle, for instance the mesial and buccal surfaces join and form the mesio-buccal line angle, while by uniting with a third, the occlusal surface, we have formed a point angle—the mesio-bucco occlusal point angle.

I think this will demonstrate sufficiently the advantages of the system, and the great aid it will be in making ourselves better understood. Of course all these terms and more are found in the little pamphlet which I hope you will all read.

DISCUSSION.

DR. H. T. SMITH: A paper of this kind may appear at first to the dentist as more or less elementary, but to those men who are teaching, it is of course the A B C's of filling teeth. The students are given these terms and taught these in the naming of cavities. It is their operating nursing bottle so to speak. I think these are mostly useful in the naming of cavities, in their keeping of records and the recording of operations in their ledgers and journals. I personally should be very glad to hear a discussion on that point as it appears to me they are very useful to dentists in this respect.

Of course with the introduction of this system of nomenclature both in America and abroad it would be necessary that the dentist should become familiar with this in order to properly read and write his papers and the reading of text books. He cannot get along without it. The point brought up in reference to the "axial surface" is a very good one indeed and the word pulpal being a new term might have a little further discussion or explanation. Dr. Ruggles referred the origination of the term to Dr. Black. I think that Dr. Clayton also put in a claim for the originality of the term. The point which Dr. Ruggles did not bring out was its use in approximal cavities, where the cavity is not compound and where a distinguishing term should be used between the pulpal wall and occlusal wall, the latter being in an approximate cavity; the wall at right angles to the long axis of the tooth and the pulpal wall being parallel with the long axis of

the tooth. The term occlusal in that kind of cavity, that wall is usually cut down; as it should be, in making the cavity a compound one. Another very interesting point brought out in the little pamphlet which I have read is the fact that the French authority has found it necessary to come to America for the basis of his statements for nomenclature; so I think it is a very great credit to our own countrymen, and to our dentist in the West, Dr. Black. The pamphlet covers the ground so well that I have no further memoranda to bring out. Mesial and Distal, although somewhat new in dentistry, have been mentioned for some years in the works of Dunglison & Gould, Medical Dictionaries. So they have been used in medicine for some time but are new in dentistry. This is so with many terms. That is about all I have to say. I think Dr. Ruggles is to be very much commended for his interest in getting out this little pamphlet for the use of the members of this society.

DR. BUTLER: This matter of dental nomenclature is one which should interest us all if we wish to be estimated as professional men, not even mentioning scientific; so that if we go into any meeting and take part in discussion or express ourselves upon any subject, we may be able to do it with intelligence, by the use of proper terms, so we need use no unnecessary phraseology in order to make ourselves understood, nor by taking a black board and drawing a lot of diagrams and saying, I want you to understand I mean so and so, but by the use of terms understood by all, should be sufficient. We had the credit, I think, of having done something in this direction in the old American association, and I am very glad the matter has been brought up here in the Ohio State society, and the preparation and putting into form what has been done up to the present time in this work, by Dr. Ruggles, and distributed to us in these little pamphlets, ought to be of very great value to us and we should bear a very kindly feeling to Dr. Ruggles and any one else who is studious enough to put his time into it to get it into shape so we can get at it in as good or even better manner than we have here.

DR. BARNES: I think Dr. Ruggles should be thanked for bringing this matter before the society even though it be an elementary lesson. One feature of this subject which I think we have failed to grasp or realize is the value in our operative work. If we have a correct understanding of the names of the surfaces

of teeth we are bound to produce a better form in our work; a better anatomical form. This develops as we become better acquainted with the terms. The newer men in the profession fully understand these terms because they have been taught in the colleges. Those of the older school are not so well acquainted with them because they were taught other terms, and so long as there appears in our books of reference and text-books, such terms as fang, eye-tooth, wisdom tooth and terms of that character, so long will it be necessary for us to teach in the elementary way, and so I for one feel very grateful to Dr. Ruggles for instruction in this direction.

DR. HARROUN: This idea of introducing elementary work in our society, I feel is the right thing. Then I feel we should not get the idea we are getting to be old men, but are young and are still growing; taking our A B C's as it were and do not know it all. And at the same time I do believe we can all learn in the elementary departments just as much as in the advanced work. We are having experiences related from time to time in the advanced work in the way of filling, practical work, extracting teeth, etc., and are not so liable to become rusty. For that reason every gentleman should do some elementary work as a review and I think we will be benefited. In this work under discussion, it has not been completed. Dr. Black has not done all; there is more yet to be classified, work for us all to do. There was one point which was not noticed in the paper, another term, and that is in the approximate surfaces. We had our attention called to the inter-proximate spaces, but there is a point here which is in contact, which is not a space but is called "embrasure." This is the point beyond the space.

DR. AMBLER: We must have a standard in all things. We have standard dictionaries, and if we expect to have terms which will be adopted by all, we must have a standard to go by. We have a standing committee in the National Dental Association, on Dental Nomenclature, and it would be my idea we should accept as a nomenclature their views and findings in the derivation, spelling and pronouncing of the terms. Now if we are going to take their standard I do not think we can find any better time to commence than right now, and if we are going to take their word we must make one change in that list of adjectives given. That is, to have them end in "al" and the

National Committee decided that their preference would be approximal instead of approximate, so we should have all corresponding. One other matter, and that is the pronouncing of "dentine" and "dentin." The committee has decided on plain "tin," the "e" has been dropped. This has been done by the foremost journals for some time.

DR. SNYDER: There is more dispute about the word approximal and approximate than any other term I can think of. Would it not be well to consider that one which is proper. Dr. Ruggles has said something about it, but would it not be well to consider that one point so we can talk with our patients correctly.

DR. MOLYNEAUX: The term as spoken of by Dr. Ambler was correct. "al" is considered the correct ending. I was on that committee and helped to make the report. That was the term ending as decided upon.

DR. STEPHAN: I am very glad to hear so much of a discussion upon this paper. It is of great interest to all of us and more particularly to those connected with colleges and their work, because it enables us to teach exactly what should be taught and what we wish. It is a plain stand for better work. The time is coming when a system of nomenclature will be devised which will enable us to give exact instructions in operative work. There is no single system at present in the forming of cavities and I think a uniformity in this line will be greatly assisted by this nomenclature; we will be better able to teach others how we form our cavities. After this we will be able to reduce these cavities to a graded system and we will then really be scientific men and will have a scientific basis to work upon. I think this is a great step in advance and while seemingly elementary it is the very highest order of scientific work.

DR. COOPER: I am only a young member in this society and have a little hesitancy in speaking, but there is one point which should be emphasized in the study—that the work is not to end here with us. We are to teach these terms to our patients, and we will find that very few of them will be familiar with the terms. There is where I find the greatest trouble. We are always obliged to explain the meaning of a term or to use a term which they understand. It seems to me it is better to use the correct term and explain it to them. This elementary work and system of education in that way reaches a great deal farther.

DR. TAFT: The points presented this morning are all very important and should be carefully studied and heeded by the profession and especially should a correct method of naming prevail in our schools so that the younger members of the profession and those who are about to enter same should have a correct nomenclature at least. They should also be impressed with the fact that much of the vague and defective namings which have been in common use should be avoided. And, perhaps, it is better to bring them at once upon a correct method rather than try to compromise at all. There is a disposition with many to compromise in this matter, take the old and the new and mix them. I think the better method is to make a full and complete step by teachers and writers as well. A point here that ought to be considered in taking up a subject of this kind is in introducing and impressing a new nomenclature on students. It has reference to their preliminary education. As has been stated in the paper this nomenclature is based largely upon the Latin language, so that one having a thorough knowledge of that language in the beginning of his student life and work will be far more likely to secure a grasp of this subject than one with no knowledge of this language at all. If he has no knowledge of Latin can he simply commit to memory the names without understanding the meaning of them and retain them. I regard this as a strong argument in favor of requiring all our students to study Latin. This should be a requirement for entrance in every school in the United States. I know it is in very many of our schools a preliminary requirement, but in some it is not; it is absolutely overlooked. A student at first says: what is the use of a language which has been dead one hundred years, but yet he does not recognize the fact that our language is taken from it. After all it does live in our own language. This is the point which should receive special attention. Now, in school and class-work you will find that very frequently the old and faulty names are used. That occurs of course with the older persons because of habit, having been trained that way in the beginning, and it is a very easy matter to overcome it. How very common it is to hear the teacher say, *dens sapientia*, canine tooth, etc. A great many editors and writers whenever they speak of cuspid say canine tooth, as you all know: and a great many other writers who speak upon this subject speak of a six-year molar. This reforma-

tion cannot be wrought in a day ; I think everybody recognizes that fact, but let us not become impatient because a change is not made in a brief time. It grows, it is not created at once, but is a rather slow growth in our present condition. Let us remember that, and so far as we can do everything possible to correct our nomenclature and old names and have it understood is why we make the changes. If a name is advanced today over one used yesterday, why is the new better? Let every student understand this. A gentleman a few minutes ago referred to the education of the people on this subject, talking to them in our own nomenclature. While the dentist should do all in his power in this direction, yet he should not use a stilted language with which they know nothing. So let us be careful in that respect not to use a language they do not understand ; we might just as well use Greek. I have occasionally heard dentists talking to their patients and using a language which the patient knew nothing about and it amounted as nothing to them. He might just as well have used Choctaw or Arabic. Always use the language which will be the medium of correct connection, and if the person addressed, does not understand it, it amounts to nothing. The speaker might just as well have remained silent. Our language to our patients should be a very different one from that which we address a class of students, especially so far as nomenclature is concerned. Let us use that with which we can convey the thoughts we have with the most force and clearness, and when it fails in that particular, it is a failure. Now these faulty names which have occurred so much ought to be corrected everywhere, especially to students and the public. But let us remember in our writing and in our speaking that the growth of a language is comparatively slow and not gather up a great array in this matter that will overwhelm the hearer, but give him just what he can take and digest and utilize in the future. Simply use it as rapidly, as judiciously, and as carefully as it can be taken and assimilated. The work that is being done by the National Association is a very good one, indeed. The profession owes Dr. Black a debt of gratitude. We can hardly appreciate how much he has done along this line until the future, when we shall realize the importance of this subject more than we do today. He has lifted it out of the slough and given it a good start.

DR. W. D. SNYDER : In the discussion of this question I find

that those having taken part were not all of one mind, and all agreed with the paper pretty well, with the exception of a little criticism but on one point and that seems to be a difference in the pronouncing the term of the subject in hand. Some pronounced it no'menclature and others pronounced it nomenclature, there is a difference in the accent. If the National Association has taken this matter up and appointed a committee to advise this work, it strikes me we should all be posted on the proper pronunciation of this term, and I believe I have heard it more differently pronounced than any one word I know of and I arise simply to a point of instruction, perhaps more than to discuss the question.

DR. TAFT: I think authorities differ in reference to its pronunciation. Both are used, although I think the committee discussed that subject.

DR. MOLYNEAUX: The Century Dictionary was taken as reference and the word was decided to be nomenclature. The other was used only by a very few people and the work of the committee of the National Association suggested the Century Dictionary to be used as a standard.

DR. RUGGLES: I feel highly complimented, indeed, that I have brought out so much discussion, I know it was elementary but I am glad to see that so many are interested. In reference to the pronunciation of nomenclature I think the point well taken and it should have been decided earlier in the discussion.

Dr. Taft struck the key-note of this discussion when he said we should have few terms and be familiar with the ones used. That, I think, is the great advantage of this system. These ten adjectives can be applied in a hundred different ways. This system has been used in one of the largest schools in the country. Dr. Black's edition is used at present and has seemed to be very successful indeed. It is also used in the East. The words approximal and approximate have been discussed time and time again, but the term approximal is incorrect as used by dentists. I have the definition here, as I expected it to be brought up.

I think Dr. Smith misunderstood me when I defined the term pulpal—as the pulpal wall is at a right angle to the long axis of the tooth, instead of being parallel with it as he said.

All adjectives should end in *al*. However, Dr. Black's latest work does not use it. The term used in my paper is the term

used in his book. I would like to see some plan outlined or some standard given whereby we can be governed by this system, and make it a point to see that all papers submitted to the public use the correct nomenclature. We can correct more mistakes in that way than any other. I am very glad indeed you received the paper as you did, and thank you for your criticism.

DR. TAFT: I do not know whether it would be a feasible matter to make it compulsory on the editors to correct papers, etc. I have no doubt that editors generally, will endeavor to conform to correct usages so far as they can. Of course, in the past they have been subject to infirmities as has every other person, but they are being rapidly improved. This should have been——.

DR. MOLYNEAUX: The discussion is closed.

DR. TAFT: I understand that, but am just making this explanatory remark.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

Paralysis Cured by the Extraction of a Tooth.—A lady, 24 years old, suffered from paralysis of the right side of the neck. The lady had fractured her upper right arm and it was thought that this was the cause of the affection. In spite of proper treatment no improvement took place. The lady went to her dentist. A few teeth were filled and the badly diseased right upper third molar extracted. The next day the patient called again and reported with much pleasure the full use of the paralyzed parts. The case is merely reported as a curiosity. The patient was seemingly of the hysteric type and the paralysis brought on by the first trauma (the fracture of the humerus) subsided to the second trauma (the extraction of the tooth).—*Dr. Muehl-Kuehner, Muenich Medical Wochruschrift.*

Local Anesthesia with Orthoform.—After using solutions of various strength of the drug, the following formula proved to give the best results:

R Orthoform (neutral).
Orthoform muriate, aa 0.1.
Aqua destil, 4.0.

The muriate has to be first dissolved in the distilled water, the solution is then slightly warmed and the neutral orthoform added. By this method the difficulty of forming a solution of neutral orthoform is overcome.

The formula has answered all requirements for a local anesthetic, it has done more than the writer expected. There is a slight burning sensation noticed by the patient, but this will subside in about ten seconds. The anesthesia seems to be longer than that of cocain and no bad after-effects could be seen. No swelling or sloughing of the gums occurred; one-half c. c. of the solution seemed to be fully sufficient to produce the best anesthetic effect. 3-5 minutes should elapse between the injection into the gums and the extraction of the tooth. The orthoform solutions are non-toxic; several injections can be made in one sitting: there is very little hemorrhage, and the wound will heal quickly.
—*M. E. Bounard, L'Odontologie.*

The Use of Nitrate of Silver in Eruption of the Teeth.—The eruption of the temporary teeth often calls for a remedy to lessen the local complications. By its local application, the medium should penetrate the covering membrane, and by its astringent and antiseptic power exercise a favorable influence upon the painful stretched gums. The author believes to have found these various properties combined in silver nitrate. An "immediate solution" of the drug is painted over the affected parts about 3-4 times per day. The next day will be seen a material improvement in the conditions. If the gums are very red and congested, the direct application of the caustic pencil is of value. By an immediate solution the writer understands the preparation of the same directly before using, viz: A pellet of moistened cotton is rubbed against the silver nitrate pencil thus taking up a sufficient quantity of the caustic. In all cases of retarded eruption of the third molar its use is indicated, except where the anatomical conditions indicate surgical interference. For such cases a small cotton pellet, prepared as above, is produced beneath the overlapping gum and gently passed all around the crown. Two applications are usually sufficient; the treatment may be repeated at intervals according to circumstances.—*F. Moutin, L'Odontologie.*

The Influence of Pregnancy on the Caries of the Teeth.—

In a number of tables the author records the results of his careful examinations. The teeth of 200 mothers, being primi-secundi- and multiparæ, of an average age of 18.8 years, were examined and for comparison, the caries frequency of 100 multiparæ of an average age of 17.3 was noted, giving the figures of the following table :

	Age.	Caries.	
Mothers, - - - -	18.8	17.9	present.
Non-mothers, - - -	17.3	16.22	“

By comparing the various tables, the writer concludes that : The caries of mothers is not more frequent than that of non-mothers. The tables further show that there is no increase in the number of carious teeth with the increase of the number of child-births and consequently no influence of pregnancy upon the frequency of caries. And further : In accordance with the comparative results obtained he denies any direct communication between gravity and caries. Pregnant women suffer occasionally from neuralgia of the teeth and gingivitis. The increased acid condition may cause unpleasant effects but probably the constant hyperæmia of the breath in gravity and in consequence thereof in the pulps of the teeth may bring about the various forms of toothache, more so if there be caries or chronic pulpitis present. Till now the theory has been favored that during pregnancy the teeth loose a large amount of their calcium salts to help in building up the osseous system of the foetus, and are therefore, more easily subjected to caries. This theory is absolute and fallacious. If the organism should be in need of a larger amount of lime salts, the food-stuffs will satisfy this want by an increased assimilation of calcium. Even the poorest food contains more lime than mother and foetus need. Resorption goes hand in hand with inflammatory symptoms. These might be produced in bone but never in tooth-substance. Furthermore, Williams has shown that formed enamel is not subjected to metabolic changes, and Black's investigations show that the teeth of mothers who have born several times are not any poorer in lime salts than those of other people.—*Dr. S. Bird, Vierteljahresschrift für Zahnheilkunde.*

Dr. A. Samsice states the composition of his alloy for plateless dentures is as follows :

Tin,	65	parts.
Silver,	29	"
Gold,	2½	"
Platinum,	3½	"

In a paper entitled: The action of formalin and sulphuric acid upon the pulp and the periodontium of the teeth, Prof. Julius Witzel recommends very highly Boennecker's method of pulp mummification (vide OHIO DENTAL JOURNAL, '97, page 465). Before the paste is applied, the pulp stumps should be saturated with a formalin cocain solution by means of the drop-pliers and the metal sound. In speaking of Callahan's method (sulphuric acid for opening pulp canals), he advocates Boennecker's modification, viz: The substitution of peroxid of sodium instead of bicarbonate of sodium. The forcible production of peroxid of hydrogen according to the formula— $\text{H}_2\text{SO}_4 \div \text{Na}_2\text{O}_2 = \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}_2$ —will remove all debris and perfectly sterilize the canals.—*D. M., feur Zahnhielkunde.*

A New Method of Making Strengtheners for Vulcanite Work.*

BY S. A. T. COXON, L.D.S.I.

STRENGTHENERS to be of any use want to have sufficient power to hold the case together during the process of mastication, and to be made in such a way as not to interfere with the strength of the vulcanite itself any more than can possibly be avoided, and at the same time to add as little as possible to the weight of the case. After carefully studying the broken dentures that have come under my notice, I have come to the conclusion that unevenness in the thickness of the plate itself has been a more fruitful source of breakage than any other, and that all fractures occur from the labial side. Round the necks of isolated teeth are also very vulnerable places when they are not supported in some way by metal. I have also found that plates when made too thick become so rigid that they will break easier than one that is thinner and more elastic. Again, vulcanite that is cooked between

* Read at the annual general meeting at Bath, and printed in the *Journal* of the British Dental Association.

metal plates will stand a greater breaking strain than if it is cooked between plaster. The best position for a strengthener is on the top of the ridge, or as near as possible as the artificial teeth will allow it to come, as this is the place at which the greatest strain occurs. It should also be of a nature that can easily be inserted after the pink rubber has been packed, and should hold firmly in place during the time the red rubber is being squeezed home, and be sufficiently light as not to add materially to the weight. Strengtheners have hitherto been generally of two kinds, a piece of round or slightly flattened wire, or otherwise some fancy arrangement that adds very little beauty and certainly not much strength to the denture, but is more often a cause of weakness.

The great fault of the old wire is that it often leaves a very thin piece of vulcanite on either side, nearly dividing the case in two; now when this happens it does very little good, besides, the amount of metal used is not as advantageously employed as it might be made in another shape. The strengthener I have here is in section like the letter **T**, and is almost univ ersally employed by engineers for struts and girders where lightness and strength are required. It takes more making than a wire, but it is five times as strong as a wire of the same weight; it has also the advantage of being perforated, and in this way becomes part and parcel of the vulcanite. The method of making is this:—to strike a piece of No. 4 metal over the ridge; this being done, you have now to make the vertical portion of the **T**, which is done by taking a piece of modelling compound and pressing it into the palate of the model; cut it away on the ridge up to the place you wish the vertical part to stand; having placed it again on the model, press a strip of tin foil into the crevice formed by the modelling compound and the model. This can easily be done by your finger and thumb, or a burnisher; this will give you a pattern of each undulation of the ridge, and if your metal is cut to this, you have only to tack it at one end and it will follow round the base of the **T** and fit accurately, without any further help from the file or shears. It is better to avoid the perforations as much as possible, as the solder will flow much easier when there is a continuous surface. You can fix it in place with a small piece of binding wire through the perforations in the metal and then solder.



One of the advantages of this strengthener is, that you can bend the vertical portion in and out to accommodate any irregularity of the teeth before soldering without impairing the strength of the strengthener. In packing I usually place one thickness of thin vulcanite under it before pressing it on the model; this insures an even thickness underneath and fixes it firmly in its place. Here is a V-shaped one; it is very rigid and takes but little making. You have simply to take a thin strip of metal, cut with a fret-saw about half through at the place you wish to bend it, put a little piece of solder on the inside of the V and a puff from the blow-pipe will solder the overlap and complete it. If you desire to bend it without cutting, place a piece of triangular iron wire in the V, then you will be able to bend it about as easily as any ordinary wire strengthener, without losing its V-shape. In packing, place the base of the V towards the model.

Now we come to partial lowers. I think these are nearly always best made bar; still some models may be so much undercut that this is impossible. If you treat it with a T-shaped tie, it will give more strength than a wire, and combine better with the vulcanite. There is only one thing more, that is the treatment of isolated teeth; this is simply a piece of perforated plate with a T soldered round it; this forms a strong resistance against fracture, it explains itself. I do not think you will find any difficulty in the manufacture of these strengtheners after once you have got into the knack of making them.

CORRESPONDENCE.

Dentists in the Independent Telephone Field.

PERHAPS it will be news to a good many of the eastern dentists to know that their western brothers have branched out in a new business, or as you might say a side business; but it is a fact just the same.

In the States of Michigan and Wisconsin, Minnesota and Iowa, and in fact all through the northwest and southwest, dentists are the promoters of a great many of the new independent telephone companies that are building exchanges and toll lines in opposition to the famous Bell Telephone Company, as that company's patent expired some four years ago, and in the meantime telephone manufacturing companies have started up, and you can buy everything pertaining to a telephone outfit as well as to a dental outfit, and is as many different places throughout the country.

The reason the dentist takes to the telephone business is this: Most of them have been and are to-day users of telephones, and like all the rest of the community have had to pay the Bell monopoly for years a good stiff rental for the use of their instruments.

As matters have been in this country, a man has to put up the price of a new hat in addition to his telephone rent every time he talks two minutes to his best girl out of town. The Bell Telephone Company has skinned us alive for a good many years, and the people in the western cities propose in the future to save their cuticle.

A few years ago when independent telephone companies were talked of people shook their heads gravely and prophesied that they could never succeed in the face of the opposition of the great and powerful corporation known as the Bell Telephone monopoly, but they have succeeded.

The invention of the telephone marked the beginning of means of communication, the possibilities of which are even at this late date but little realized. The wildest enthusiast, the most visionary dreamer of twenty years ago, had not the courage

to predict that in so short a time it would be possible to hear a whisper from New York to Denver, but such has been the advance of science.

It has been admitted by the officers of the Bell Company that the States of Michigan, Wisconsin and Iowa are lost to them, and they never again expect to get any revenue from there.

As Judge Taylor says, "I know of no invention made within the last fifty years which touches the people so closely in their lives and their happiness as the telephone. We are told that life is not to be measured by years, but by what you can do and enjoy in it; and that facility of instantaneous and universal communication, which, in fact, adds new faculties of speech and hearing to the human organism, does more to add to the enjoyments of life than any other one invention I can think of made within fifty years past. In this I comprehend not only what the telephone is and has been, but what it is ready now to be, provided the people can have that enjoyment of it which they have for and which the law has promised, and the people have paid for it the largest price ever paid for any one invention that I know of. The American people have paid more money for the telephone, for the invention in it, than they have for any other invention made within fifty years past."

DR. N. BOOTH,
Ashland, Wis.

ALL SORTS.

Treatment of Peridental Inflammation with the Cataphoric Current.

In peridental inflammations, acute or chronic, the cataphoric current has been, to me, of greater value than in any other class of cases. We are all too familiar with these cases in which an acute and persistent pericementitis always follows operations of any length, and with these chronic cases of long standing that develop severe inflammations upon the slightest provocation and at the most inconvenient times, and also with that especially troublesome class of devitalized teeth in which it is impossible to keep a filling for more than a short time without causing discomfort and suffering to the patient. It is true that many of these cases are readily amenable to ordinary treatment, but it is equally true, also, that

many of them resist all our efforts in the way of topical applications and systematic treatment, and it is here that the electric current is of the greatest and most indispensable assistance.

To a saturated solution of potassium iodid is added about one-fifth its quantity of a mixture of equal parts of the tinctures of iodine and aconite. A pledget of cotton is saturated with this preparation and applied, by means of the rubber cup electrode to the inflamed gum. About one milliampere of a ten-cell current will be found sufficient, and should be continued not longer than five minutes. In most cases this one application is all that is necessary to reduce the inflammation, the pain quickly subsides, and there is seldom a recurrence of the disorder.

During the past winter two cases came under my attention which possessed many points of similarity, and which serve very well to illustrate the foregoing application. Both were ladies of about the same age and of highly nervous temperaments, and both were under my treatment for the first time. In each case I was informed that previous dental operations had invariably been followed by severe inflammation, and in one of them the devitalization of a pulp had always resulted in an abscess and the ultimate loss of the tooth, several teeth having been lost in this way. As neither patient had received any dental treatment for some years, there was naturally a serious condition of affairs encountered, and it was necessary in both cases to devitalize one or more pulps. These operations were immediately followed by severe and extensive inflammation, with most intense suffering, which obstinately resisted all treatment until the application just described was resorted to. Two applications were necessary in each case, but were followed by a disappearance of the symptoms, and their treatment was carried to a successful conclusion.

The value of this method of treating peridental inflammations lies chiefly in the fact that, in very many cases, it succeeds where all others have failed.—J. M. FOGG, in *Cosmos*.

Method of Cementing Crown Dowels Into Roots.

I endeavor to cement the tooth-crown in such a way that it is possible to get it off without demolishing the crown. In the crown I presented, the pin required very little cement to hold it in. The cement I use is gutta-percha applied in this way: I warm the crown, and while it is warm I apply a little chloro-gutta-percha to it, or in other words paint the post with it; the chloroform immediately evaporates, leaving a thin film of gutta-percha. I then apply the crown to the root, and remove it as quickly as possible. I warm the crown again, and repeat the opera-

tion a number of times, until I find I have it in position, and a mere film of gutta-percha on to hold it there. The last time I remove the crown, I have some zinc phosphate mixed to a cream-like consistence. I almost invariably use a square bottle on which to mix my zinc phosphate. You can hold it by the nozzle and use the sides as a slab. I fill the bottle with water. In winter I use cold water directly from the faucet, and in summer I use ice water. With that means you can sufficiently retard the setting of any oxyphosphate and get it to work satisfactorily. After removing the crown and heating it for the last time, just as I introduce it, I insert on the inside of the cap or on the end of the root enough oxyphosphate to fill any interstices that will be there, and then I put the crown in position. Should occasion require it, by thoroughly heating the crown, putting a heated piece of metal against the metallic parts, removing it occasionally as it disturbs the patient, and repeating the operation, you can remove whatever hold there is to the crown and cause it to give way. To be able to cement crown- and bridge-work with gutta-percha I think constitutes a new era in that line of work, because one of the greatest objections to this work has been the difficulty of removing it when occasion required. With bridge-work cemented on with gutta-percha, all you need to do is to apply a heated instrument, and in five minutes you loosen it so it comes off. It does away with the question of removable bridge-work, of which so much has been said and written. Removable bridge-work is almost impracticable, in my opinion, except in special instances. It is so laborious and so intricate in construction that there are very few patients who will remunerate the dentist for the time he spends in its construction.—GEO. EVANS, *Cosmos*.

Constitutional Treatment for Pyorrhea Alveolaris.

I think it will be but a short time when the dentist will treat the patient constitutionally as well as locally. In treating loose teeth, caused from pyorrhea alveolaris, after cleaning the teeth of all the calculus I use rhustox, strength 3x, homeopathic doses. I could give a great many cases where I have had success, but I will only cite one.

A Sister of Mercy from the convent in our town, came to me about a year ago and wanted me to extract her teeth as they were bothering her so much that she could not eat. On examination I found her suffering with pyorrhea alveolaris, after cleaning the teeth and treating the surrounding tissue, the teeth continued quite loose, I gave her rhustox, strength 3x, once every day for a week, then the teeth became solid and have remained so ever since.—DR. I. W. HAYS, *Pac. Med. Dental Gazette*.

Porcelain Crown.

Recently I had occasion to make a crown for one of my patients, which although a bad case turned out so satisfactorily that I herewith give others the benefit of the *modus operandi*. The idea may not be an entirely new one, but it was new to me, and was the result of efforts to overcome difficulties I had not had occasion to obviate before.

The tooth was a lower right first molar, with root-canals almost filled with pulp-stones. The crown of the tooth had been cut down to the neck, so that none of the tooth structure protruded beyond the gum line. The periodontal membrane came almost to the surface, causing the neck of the tooth to be hypersensitive. The gingival margin along the buccal surface had contracted so as to show very plainly the bifurcation of the roots, and the lingual side of the neck was almost in the same condition, while the gums over both anterior and posterior roots had receded still more, so that the surface presented was convex.

The periodontal membrane coming up close to the surface as it did, together with the hypersensitive condition of the patient generally, precluded the possibility of making a band. (The patient suffered from severe organic heart trouble, which prohibited the use of cocain).

Two holes were drilled, one into each root about three-sixteenths of an inch deep, and 16-gauge round iridio-platinum wire posts were fitted into these, protruding from the tooth one-quarter of an inch. The holes in the roots were not made deeper for fear of drilling through the side.

The next proceeding was to cut out the pulp-chamber into a deep saucer shape. An impression of this cavity was taken in gutta-percha, and with Watts' metal a pure gold lining 32-gauge for it was struck up. This lining was placed in the pulp-chamber and burnished, iridio-platinum pins thrust through it, which owing to the divergence of the roots almost crossed each other and had to be bent up straight and parallel.

A wax impression was taken and the whole was invested in marble dust and plaster, the wax removed and the inlay filled up with 22 k. gold, producing a solid and exactly-fitting gold inlay, with two iridio-platinum pins protruding through it, both above and below.

The next step was to swedge an iridio-platinum covering for the root, which after being properly fitted was perforated with two holes, allowing the inlay and pins to be placed in the tooth, and the iridio-platinum covering to be put down over it.

Now two platinum barrels were made with one end closed to fit down over the posts, all the parts were put in position, a gutta-percha impression taken, and the entire appliance removed to the laboratory, where the platinum barrels were soldered to the iridio-platinum covering. The work then consisted of two pieces—one the gold inlay with the two iridio-

platinum pins, and the other the small iridio-platinum plate with the two platinum barrels soldered to it; this latter piece was now used as a base to make an all-porcelain crown with the platinum barrels imbedded in it. The soldering of the barrels and tooth facing to the iridio-platinum base was done with 30 per cent platinum solder. The inlay with its posts was cemented into the roots and pulp-chamber, and when the cement set proved to be very secure indeed. Next the crown was put down over the protruding pins and cemented into place.

The operation required considerable time and patience, but the result is a crown of excellent lasting qualities, great comfort and beautiful appearance, and I know of no other way in which I would have been able to save the roots of the tooth.—H. H. SCHUHMANN, *Dental Digest*.

A Mode of Devitalizing Teeth.

Dr. F. C. Pague gives his method in the *Med.-Dental Gazette*, as follows:

The method is particularly applicable to posterior teeth in particular, where we find it necessary, by a means that to me has proven more satisfactory, than anything I have been able to get hold of. I prefer it because there is little or no pain in its use, that is, the aching and soreness that we usually have from placing the devitalizing fibre. I prefer it again because it can be retained for an indefinite time without any danger of future trouble. The preparation that I use is very simple, consisting of minute particles of crystals of arsenic and about double that quantity of alum; into these particles I drop a drop of campho-phenique and take the mass up on a small pledget of devitalizing fibre. You could use cotton just as well as the devitalizing fibre, but I prefer the devitalizing fibre because in it we have morphine, which, of course, will assist in keeping the tooth quiet. I have experienced some soreness in the teeth after the second or third day, but not sufficient to inconvenience the patient to any considerable extent. The soreness the patients complain of is to the extent that they prefer to favor the tooth—they don't want to bite on it—but not to the extent of aching. To overcome that I have been using recently iodoform; where I have used iodoform I find that there is no soreness whatever. This application I have been using for some three years. In my hands it has proven more satisfactory than anything I have ever used where it has been necessary to place the devitalizing fibre, to leave it there for any particular length of time. Of course there are other modes of devitalizing. I have demonstrated this not as an exclusive mode, but as one of many ways. I have had this

devitalizing fibre in a tooth for from seven to ten days. I could leave it there a month or three months without any possible danger or trouble. There is not any soreness; that is one nice feature about it. I have removed the pulp and filled immediately.

Suggestions in Bridge-Work.

THE BACKING.

The porcelain is first ground to fit the gum or cap, whichever will be required. If the bite is at all close the porcelain may be ground from the pins, gradually out to the cutting edge, bringing it almost to a knife edge at the point. When this is done and the surface of the porcelain carefully cleaned with alcohol to remove all wax, commence the backing with a piece of twenty-four karat gold, about thirty-six gauge. With this thin pure gold a perfect adaptation is very easily secured, if it be annealed several times during the process of fitting. If the porcelain has been ground to fit a cap, as in making a Richmond crown, the backing should extend over the entire surface, from cervical edge to cutting edge. This is done to allow the solder to flow between the cap and backing, forming a perfect joint. The backing should be allowed to extend a little over at right angles, but it must not be bent down or lapped over the labial side. Supposing the backing to be fitted as desired, carefully remove it from the tooth and place it on charcoal or an asbestos block and flow twenty-two karat solder over the entire surface, from the pins to the cutting edge. Flow this on as thick as it will be required when the work is finished. It may at intervals be placed on the tooth to see how thick the bite will allow it. If this has been done well, the work of soldering is nearly half finished and the tooth has not been heated at all. Next mix up a little thin cement, spread it on the backing, place it on the tooth, and press it down hard, squeezing out all the surplus. Spread the pins to hold the backing on, and the tooth is now ready to be waxed in place on the model. If it be a bridge be careful that the porcelains do not come into absolute contact; have a little space between each one.

THE INVESTMENT.

Invest in asbestos, pumice stone and plaster. Bring the investment well over the cutting edges of the backing and teeth, for it will be remembered that all the soldering that will be needed for that part of the work has been done before the backing was fastened on. This is very important, for it absolutely prevents any possibility of borax reaching the cutting edges of the porcelain facings, where they are thin and likely to

break, and also prevents these delicate parts becoming exposed to an accidental blast from the blowpipe. After the investment has set, remove the wax and fill carefully all the little space between the backings with investment material, to prevent the borax reaching the porcelain from this direction. Cement answers the purpose just as well for this last, if it be allowed to set hard before commencing to solder. If these directions have been followed, the piece is safe from borax and from the danger of the solder getting in between the backing and the porcelain.

HEATING UP.

The piece is now ready for heating. For this purpose nothing is better than a Bunsen burner and charcoal. Use the burner with the ordinary spider on it. Next get a piece of stove pipe about twelve inches long and six inches in diameter. With a heavy pair of plate shears, cut down from one end, about four inches, at intervals of an inch and a half. Turn these flaps back at an angle of about forty-five degrees. Cut a few notches in the bottom end to admit air, and set this over the Bunsen burner. Fill this receptacle with charcoal, light the burner and place the investment on it. In about fifteen minutes the work will be hot enough to flow eighteen karat solder without the aid of a blowpipe. It will be remembered that all the soldering now needed will be to unite the parts together as the strength of the work has been made before the backing was fastened on the porcelain.—H. H. JOHNSON, in *Items*.

Dr. Hart's Ideas of the Evolution of Caries and its Prevention.

From a paper read before the California State Dental Society, and published in the *Medico Dental Gazette*, we make the following digest:

Dr. Hart says, I believe decay to be a natural force which acts through media upon all material bodies, with the effect of changing their identity. I do not consider it a process of a force, nor as the result of the action of a form of energy, but as a force or form of energy that is known only to us by its manifestations through matter—effecting changes from a state of soundness or perfection to one less sound or perfect.

Science has already proven that upon water for many of their combinations depend the animal, the vegetable and even the mineral kingdoms. The cell holds imprisoned within its walls water of combination. The crystal holds within its angles water of crystallization.

Bacteria will not grow on tissues that have been treated with solutions of certain strength of bichlorid of mercury, nitrate of silver, chlorid of gold, sulphate of copper, chlorid of tin, formaldehyd, the essential oils, and many of the alcohols, acids and alkalies.

How these chemicals act so as to prevent the growth of bacteria is due to their ability to harden albumen and render it insoluble to the action of bacteria; that they are powerful in preventing decay just in proportion to their ability to form insoluble albuminates with the various tissues of the body. In many instances when applied to tissues they cause a shrinkage or expansion quite beyond recognition. That the changed appearance noted in the tissue is due, in part at least, to the altered condition of the water in the tissues.

Bacteria, I believe, enter the body in a manner similar to that of the roots entering the ground of higher forms of the vegetable kingdom. They must gain lodgment, and then just as the roots with their digestive fluids dissolve the soil and even penetrate rocks, so bacteria penetrate the tissues, unless the cells are too insoluble, or contain substances having a greater affinity for the water necessary for the growth of bacteria.

Hence the importance of rendering the water in the tissues inaccessible to bacteria, and that the way the cells render themselves germicidal is by removing the water from the bacteria themselves, or else so placing the water of the tissues as to be insoluble to the digestive action of bacteria. Drying removes the water of combination in part, so although the tissues may be covered with bacteria, the bacteria do not grow; not because the bacteria are dead, but because they cannot get the water necessary for their growth. The proof that it is only water that is needed anyone knows who has had experience with dried foods that have become damp.

I believe if it is through a change in the main compound of the body that it becomes possible for disease to manifest itself, whether it be an atrophy or hypertrophy of the tissues, resultant from the action of bacteria, chemical or natural forces, THE MORE STABLE WE CAN FIX, SEAL OR COMBINE THE WATER IN THE TISSUE, THE MORE EFFECTIVE WILL BE ITS POWER OF RESISTING DECAY.

From my experiments with the teeth I believe it is possible to fix, seal or combine the water in the teeth so as to be inaccessible for a time to bacteria.

Carrying into actual practice the application of the principle, viz., protecting the water in enamel and dentine by causing the tooth, and the bacteria as far as they have penetrated the tooth to take up certain substances dissolved in water, like formaldehyd, nitrate of silver, chlorid of gold, sulphate of copper, chlorid of zinc, chlorid of tin, and a whole host of substances of a like nature that I believe have the power of protecting the water in the tissues from the growth of bacteria, I have been able for the past three years, and so have many of you, to stop decay for a few months where the teeth were literally melting away before the action of bacteria.

Formalin or formaldehyd is an agent with great power in the prevention of decay due to bacterial action. After a year's experience I can report nothing but success. I have found it a boon to these desperate cases of recurring decay, where the teeth seem to be literally melting away before the digestive action of bacteria.

For the past year I have used formaldehyd about as follows: After cleansing the surface to be hardened with pyrozon (three-per-cent. medicinal) I make several applications of the formaldehyd, varying in strength from two to forty per cent., forty per cent. being full strength, as it comes to us from the shops, to the cavity, carious surface, and healthy portion of the tooth and teeth under the rubber-dam, from ten to forty minutes. The cavity is then dried out and coated with a saturated solution of paraform in chloroform, to which has been added sufficient hard Canada balsam to make the solution a thin varnish. Into this, after waiting for the varnish to nearly dry, may be burnished amalgam, stuck gold, gutta-percha or cement.

Formaldehyd should never be applied to the surfaces of the teeth except the rubber-dam be in position, fitted evenly around the necks of the teeth, so that there shall be no holes whereby the mucous surfaces of the mouth may become exposed to the action of formaldehyd, as it produces an ugly slough.

In the application of the formaldehyd it is important to have the surfaces of the teeth free from all adhering colonies of bacteria so as to be sure and kill all bacteria that have penetrated the enamel or dentine. I generally include under the dam five or more teeth, so that I can treat their surfaces to a bath of formaldehyd, thus arresting and preventing the occurrence of decay. I repeat this operation until all the teeth have been so treated. If it is a very bad case have the patient return every three months for treatment.

Splint for Loose Teeth.

The method is as follows: Ligate the teeth if they are very loose; polish the grinding or cutting surfaces with stones or disks, make a groove $\frac{1}{32}$ of an inch thick from one approximal surface to the other in small teeth, such as lower centrals. Cut out a pit $\frac{1}{30}$ of an inch deep near approximal edge to avoid the pulp. In large teeth two pits may be necessary.

In the groove a thin piece of sheet platinum 38 or 40 gauge is to be burnished. When this is fitted properly, punch a hole through the platinum immediately over the pits; fit iridio-platinum wire (20 gauge) into the pits, through the holes in the platinum and solder in place.

When all the loose teeth are thus prepared, and the little concave platinum pieces with the pins are properly in place, take an impression in plaster, and if the platinum pieces were not removed in the impression, put them in their places upon it; varnish impression and pour in plaster and pumice stone. When the case is separated it will be found that all the little platinum pieces are in their respective positions on the teeth; they are now soldered together and made as thick as required. When this has been done, file, polish and cement in place with thick cement.—F. L. FOSHEIM, *Items of Interest*.

Use of Amalgam in Connection with Gold.

Take for example, a disto-occlusal cavity in a molar, the decay reaching to the cementum. By means of a cotton wedge for three days gain plenty of space and comfort in the tooth, apply dam, remove decay, and bring the buccal and lingual margins well out beyond the point of contact, where they can be cleaned with a brush, and use care that the point on the margin where enamel ceases and cementum begins is quite smooth. Now obtain sufficient retention, including the usual dovetail at the grinding surface, apply as a matrix a thin strip of metal (German-silver is excellent), and hold this firmly against the *neck* of the tooth by means of one or two wedges dipped in sandarac. An application of carbolic acid, volatilized with warm air, gives asepsis and lessens subsequent shock from cold. Now insert amalgam to about one-third depth of cavity; and with the Darby-Perry excavators, Nos. 23 and 24, trim this body of amalgam to an ideal cavity floor. Then remove matrix and with a fine strip carefully polish the partial filling, and fill balance of cavity with gutta-percha to protect the amalgam and preserve the space. At a subsequent sitting one is greeted by a much simplified cavity.

With the dam in place I perfect my new cervical margin and commence my gold filling with hand pressure, carrying the gold over the cervical margin and condensing. Now apply matrix as before, and just here is a point of excellence in this form of matrix. It is held rigidly against the cervical margin, where I have already sufficient excess for polishing, and as the filling is built up (always building against the walls of the cavity) the matrix is forced backward, giving me the contour just where I want it. The matrix is easily removed, and I find the principal excess of gold is over the buccal and lingual margins, where it is most easily polished away. The matrix removed gives easy entrance for strip and disk. The finishing of such a filling is a simpler matter; the true cervical margin is already polished, so no injury is done the gum and

slight discomfort is inflicted upon the patient, especially if the disk be lubricated with a little vaselin. The contour of the completed plug occupies a portion of the original space gained, so that in a day or so the separation is entirely obliterated and the crowding of food between those teeth—that so great annoyance—is avoided.—J. W. MARSH, *Digest*.

Full Porcelain Crown Without a Peer.

Under this title Dr. Cigrand describes his intradental band crown in the *Dental Digest* from which we make the following digest :

The band, as its name implies, is placed in the tooth substance immediately within the gingival circumference, and in partial crown-work at a point midway between the cusps and the cervical portion of the tooth. The width of the band depends entirely on what process of dental retention is desired, but in most cases it is seldom more than an eighth of an inch wide and about 30 gauge, made of gold or iridio-platinum. The band in all instances is anchored in the root by means of cement and need not necessarily form a part of the crown proper, but may be set independently of the latter.

The instruments for accomplishing these results are simple and their application is readily understood. The set consists of two trephines of sizes usually desired for banding the anterior ten teeth, and a gauge-mandrel which has two stumps the exact complements of the trephines. The trephine is so constructed that the face of it is slightly larger than its body; this allows the instrument to cut without pinching. It requires but a few revolutions of the trephine to effect a perfect intradental groove. Grind the root in such a manner as to describe a concave surface, the concavity being at the labial and lingual points, while its mesial and distal margins present an elevated edge. The tooth by this method is left with firm walls at the point where the strain is greatest and most likely to fracture. By thus shaping the root-end you have not materially weakened the root, and you have made it possible to easily adjust and fit the Logan crown, the latter being beveled from the platinum posts.

In using the Ottolengui canal-reamers it is a mistake to employ a large one and produce a large circular opening into the root to receive the Logan post. Choose a small reamer, and by giving it an antero-posterior movement you are enabled to cut an opening of an elliptical character, and you leave the root structure thick at its *lateral sides* where the major strain falls and where the root must of necessity be the strongest. Further, this rhomboidal opening allows the Logan post to tightly

hug the walls of the root-canal and thus afford additional anchorage to the crown.

After having given the root this special shape, grind and adjust the Logan crown to the root. Then select the proper-sized trephine, place same in the handpiece, and with a few rapid revolutions of the trephine the intradental groove is produced. Now make a gold band complementing the respective trephine-stump on the gauge-mandrel, and after soldering the band and trimming off the rough portions you are ready to set the band with cement. But before setting same it is well to put a plug of cotton in the root canal to prevent the cement, while attaching the band, from filling up the canal. Mix the cement to creamy consistency, add cement to the two surfaces of the band, and register it over the trephine groove, then press it home. Let the cement thoroughly set, and with corundum stone grind the band even with the trimmed face of the root. Set the crown with chloro-percha or chloro-rubber and cement.

Privilege and Duty.

If the patient of another man should pass under our observation by accident, as when accompanying one of our own patients on a professional visit, both ethics and common justice demands that we should make no remarks deprecatory of our professional brother, nor should we try to win the patient by alienating him from his regular attendant. Or, should another practitioner entrust his patient to our care for some special service, we should be scrupulous not to undertake any work other than specified. Our fellow dentist has displayed his confidence in our integrity by entrusting his patient to us, and has paid a compliment besides, tacitly admitting that in the particular case ours would be the better service. It would be a poor return to deliberately alienate the patient.

But where the patient voluntarily solicits our service there is no reason whatever for withholding it, nor for advising a return to a dentist in whom it is evident that he has lost faith since he seeks advice elsewhere. The dentist is as much in business as the shop-keeper, in a sense, and there is no reason why he should turn away voluntary patronage.

It is well, however, to refrain as far as possible from criticising the work of others. Aside from the duty to be charitable towards the faults of others, we do not always know the circumstances under which the work has been done, nor indeed how much of the patient's tale may be believed. But this rule of charity need not be extended so far as to shield those who are guilty of malpractice, as appears to have been true in both cases cited. Our first duty is to the patient. We should be

ready always to give our own best service, and this at times includes warning against incompetency. In such matters, however, ripe judgment may be required to avoid error.—From editorial in *Items*.

A Few Considerations in Filling Teeth.—Buccal, Labial, or Lingual Cavities.

The fact that enamel is vulnerable to the attack of micro-organisms, while filling material is not, should give us a clearer conception of the required line of treatment in all those positions which are subject to the influence of the destructive agent. The broader we make our metal surface at the expense of the enamel-surface, the more certain we are to avoid a recurrence of decay, and yet this does not imply that we must ruthlessly or ill-advisedly carve away sound enamel for the purpose of making a broad metallic area. It simply implies that we shall not stop short of reaching perfectly sound enamel in the extension of these cavities, and that particularly in positions suitable for the lodgment of micro-organisms we shall be especially thorough.

The surface of the enamel surrounding one of these cavities must be critically examined for defects. Sometimes a crescentic line of discoloration extends from the cavity in such a manner as to confuse the operator with regard to the true condition of the enamel under it. It may be simply a discoloration on the surface, with sound enamel below it, or the enamel may be softened to considerable depth and the discoloration tend to hide the defect. The only way to determine the true condition of the enamel is to thoroughly polish away the discoloration, leaving a white and glistening surface. To the enamel, we may know that the destructive agent of caries has not yet affected it, but if the enamel shows disintegration on its surface after the brush has been used, we must cut out this disintegrated tissue, even if it has not already penetrated the entire depth of the enamel.

The proper extension of the cavity rootwise involves the carrying of this margin well under the gum. There are two reasons for this—first, the one already given in connection with approximal cavities, that wherever the filling is carried under the free margin of the gum there will be no recurrence of decay at that point, and second, that the gum is more likely to remain healthy when overlapping a smooth gold filling than when overlapping tooth-tissue, particularly if there has been any recession of the gum. This latter statement may appear illogical at first thought, but a somewhat close clinical observation would seem to confirm it beyond any doubt, and a careful study of the conditions will suggest a

tenable reason therefor. In all cases where there has been any extended decay it will be found that the margin of the gum has been interfered with in one of two ways. Either the decay has crept up under the gum, leaving the free margin lying in the cavity in an unhealthy condition, or else the gum has progressively receded and is lying against the cementum instead of enamel. In the latter case the cervical outline of the cavity is usually ill defined, with little penetration of the carious process. Under either of these conditions the gum will be found abnormal. If in the preparation of the cavity we press back the gum gently, but to considerable extent, and make the cervical margin of the filling sufficiently rootwise, we shall find that the gum will rapidly cover it in a healthy condition. Not only this, but in many cases the gum will creep so far crownwise as to cover the neck of the tooth and filling far in excess of its position before the operation. It apparently takes more kindly to a smooth gold surface than it does to cementum which may be denuded, or to enamel which may be slightly roughened. Some extreme cases of this kind of gum-reproduction have been noted, particularly in cuspids, where the gum has been known to cover the cervical portion of a filling to the extent of over two millimeters. Such results as these are sufficiently gratifying to reward the operator for the necessary expenditure of energy, and the patient for the discomfort accompanying the work.

In cases where it seems impracticable to force back the gum sufficiently by pressure, it may be slightly cut perpendicularly, when the flaps will readily yield to slight force and expose the neck of the tooth. After the completion of the filling these flaps will readily reunite, provided the operator has been careful not to lacerate them. In very large decays, where the gum has filled the cavity with a hypertrophied mass, it should be cut out with a lancet and the cavity packed with gutta-percha for some days before attempting to fill. The gutta-percha should be allowed to extend well over the cervical margin of the cavity so as to force the gum back and expose the margin perfectly. This will greatly facilitate the operation and avoid laceration of the gum.—C. N. JOHNSON, *Cosmos*.

Extraction of the First Permanent Molars.

I would strongly urge that this operation be performed from four to six months prior to the eruption of the second permanent molar. The time can be determined by the eminence and rounding of the superimposed tissue over this tooth; an idea can also be formed as to the near or remote approach of the second permanent molar by puncturing the gum with a fine, sharp-pointed exploring instrument after cocain has been

applied. This means of diagnosis is rarely required, as the objective symptoms incidental to the eruption of a molar tooth are usually a sufficient guide when to operate.

After deciding upon this operation, it is imperative that all four of the first permanent molars be extracted, even though one or two be quite sound. By this means alone can the best general results be attained. By operating at the time suggested, the second permanent molar will travel forward during the process of eruption, and its antagonizing tooth will do likewise, and the result will be the securing of a more perfect articulation than where no regard as to time or completeness is paid in connection with this operation.—W. MITCHELL, *Items*.

Surface Polishing.

None of the means commonly employed by patients, as the brush and dentifrices, dental floss and washes, implies *cleanliness* for the teeth, much less freedom from decay; but a regular system of surface-polishing with stick and grit gives positive cleanliness, effecting as it does the absolute removal of all deposits,—solids, semisolids, viscid fluids and bacteria,—thus placing the tooth in the best possible condition to resist decay. The importance of this method of cleansing and stimulation in the mouths of children, commencing with the deciduous teeth at about two years of age, can scarcely be over-estimated.

It should be continued at intervals of about a week during the period of the temporary teeth, and maintained with equal regularity after the eruption of the permanent ones, gradually extending the time for cleansing to periods of three or four weeks on to adult life. The results from this treatment have proved uniformly beneficial.—D. D. SMITH in *International Dental Jour.*

Cyst of Maxillary Sinus.

C. J., aged 32, came under my care in July, 1898, with a history of a swelling which had appeared four years before below the left eye, with frequent pain. It had remained in this condition until twelve months ago, when a fullness was felt in the mouth; latterly this had increased a good deal. Fluctuation was easily felt between the roof of the mouth and the front of the antrum.

Under an anæsthetic the swelling was opened in the canine fossa, and the front of the wall, which was very much thinned, removed. The cyst was found to contain a very large quantity of clear, glairy fluid, like

white of egg, in which were white glistening crystals, of cholesterin. The cavity was well washed out with an antiseptic solution, the walls scraped with a sharp spoon, a drainage tube inserted, and daily antiseptic washing employed. I saw the patient at the beginning of November, and he was then quite well.

True cysts of the maxillary antrum are very rare, and before operating I concluded that this was a case of cyst of the upper jaw itself independent of the antrum. I am, however, led to believe that this cyst was in the latter cavity from the following facts:

- (1) There was easy communication between the nose and cyst.
- (2) The finger passed through the opening could thoroughly explore what seemed to be the cavity of the antrum.
- (3) The great extent of the swelling in the mouth.
- (4) The quantity of the fluid evacuated.—*British Medical Journal*.

Logan Crown and Intra-Dental Band.

Dr. F. L. Platt describes his method of construction in the *Pac. Med. Dental Gazette* as follows: Method of setting Logan crown, using an intra-dental band to strengthen the root. The root being ground down as usual, and the canal opened sufficiently to admit the pin of a suitable Logan crown, a groove is cut around the opening of the canal with a trephine or small fissure bur. Into this groove a band of gold is fitted and soldered to a disc of 30-gauge pure gold, shaped so as to cover the end of the root and burnished carefully to it. The pin of the crown is pushed through this disc, and the crown having also a disc of 30-gauge gold burnished to adjoining surface, is placed in position with a little wax placed between the two discs of gold. The crown with the discs in position is now removed and invested, the wax removed and the discs soldered to the pin. This makes a very smooth-jointed serviceable crown, as perfect adaptation is secured and the intra-dental band strengthens the root and keeps the crown from rotating.

A Method of Making an Open Faced Crown.

Suppose that this is a cuspid. With a thin corundum disc or, preferably, a thin diamond disc, I should straighten the sides of the tooth, and I should grind away a little of this labial bulge. Let my cuff represent a band. Take a measure and form a band by lapping and fitting it up under the free margin of the gum and letting it extend below the cutting edge quite a little. Having fitted this band perfectly under the

free margin of the gum, bevel the edges and fit at the bulge, drawing it over. With a fine saw cut this front portion out, allowing the gold to extend around freely at this point, leaving quite an amount of gold near the gum line and extending down on to the face of the cuspid more than you want when it is finished. Now, with a saw, cut out the lingual side in the same way. Remove it and, with a pair of pliers having one side round and the other flat, contour the gold, draw it in. Then, replacing it on the tooth, burnish it down until it fits upon the under side as well as the outside or labial portion. An impression can then be taken in moldine or plaster and a fusible metal cast made of this under side and a piece of metal swaged to it. You can put the metal on and wax it, and very carefully removing it, invest and solder. Tack it at one point, then replace and reburnish the gold that is to go around on the face. I have had an instrument constructed recently that will enable me to swage, directly on the tooth in the mouth, the pure gold or nearly pure, and make an open-faced cap without resorting to fusible metal dies. It is not very long since I adopted that method; but I should not confine myself to swaging in the mouth always. Sometimes I am obliged to resort to impression in plaster or moldine for making a little die and swaging a piece to go on the under side and come up over the biting edge. If that can be seen done in clinic, it would make a very good clinic and it has been among my pet methods. Here is one open-faced bicuspid:

I should like to show you the taking of impressions and pouring zinc directly into the impression after drying it. I use a perforated cup, taking the impression in plaster and sand, using asbestos paper to form a tray. We will suppose we are to make a cup that can be heated so that this plaster compound can be dried out. I sometimes take a compound impression, enlarge a little, make a zinc die and strike up an impression cup that will fit the case. After awhile you will get a sufficient number of cups so you can have them on hand and find you can select a cup that will suit almost any case. If you want to make a partial gold plate, for instance, supplying posterior teeth for the lower jaw, it is of importance that you have a good cup to get an impression. An impression having been obtained in plaster and sand or powdered silex, I take asbestos paper and wrap it around the impression, sticking the ends with ordinary liquid silex. The silex will stick these together so that there is no danger of coming apart. Paint this band all over with silex, making it stiff, then filling in any holes there may be, so as to get a perfect cup into which you can pour the zinc; this is put into the oven and thoroughly dried; then melt the zinc, being careful not to overheat it. Dr. Pearsall, of Dublin, told me his plan was to put in a little new zinc every time he melts. Melt the zinc and be careful not to bring it to a glow; then let

it cool down and let shrinkage take place until the zinc will just run well and you will have only the slightest depression in the centre, if you pour it rightly, and you will get a perfect model upon which you can swage your plate. For full upper sets, as a rule, I make my casts in that way, of zinc, and can get good results, in preference to Babbitt metal.—G. W. MELOTTE, *Dom. Journal*.

Fatalities from Anesthetics.

It is with great difficulty that figures relative to mortalities from anesthetics are obtained, because neither the local nor general government makes any effort to especially chronicle the deaths from anesthetics, and in many instances the death is attributed to some other cause. Dr. Ernest Hankel, in his recent book, "Handbuch Der Inhalation Anesthetics," states that he has made a very careful investigation into the merits of the several sleep-producing agents, and his research yields the following statistics:

Pental in 213 cases, one death.

Chloroform in 2,039 cases, one death.

Ether in 5,090 cases, one death.

Ethyl Bromyd in 5,228 cases, one death.

Nitrous oxid in 500,000 cases, one death.

BRIEFS.

Where there is a Small Thermal Tolerance it is plainly indicated that care be used to protect by lining the pulp-wall with some means to reduce conduction.—*Louis Jack, Cosmos*.

Local Anesthetic for Extraction of Teeth.—Dr. F. N. Brown says he has excellent results from injection of peroxid of hydrogen for the painless extraction of teeth. No bad after effects.

Formaldehyde.—It is well to instruct the patient to breathe through the nose while application of formaldehyde is being made. Should any drop on the tongue, cheeks, or lips, swab with cotton dipped in grain alcohol. This will allay the burning sensation.—*J. H. Hanning, Items*.

Agathin and Facial Neuralgia.—Agathin given in slight doses is an excellent remedy in facial neuralgia, which is sometimes caused by dental irritation. It has been found to give good results in the treat-

ment of ticdouleureaux in the first stages of the disease in doses of from 2 to 8 grs.—*Items*.

Alkalithia.—In pyorrhea alveolaris, where uric acid is present in the system, alkalithia is one of the very best known remedies and has been recommended by some of the best known practitioners in this country. The dose is one teaspoonful in a tumbler of water three or four times a day.—*Items*.

Stringy Saliva and Carious Teeth.—Clinically it is noticed that badly carious teeth are usually associated with stringy saliva. While the fact is known that albuminous substances ferment with alkaline reaction, it may be fairly argued that saliva which contains fermenting albuminous matters is in a condition to act rapidly upon carbohydrates introduced into the mouth.—*O. E. Inglis, Cosmos*.

Cocain is one of the most unreliable drugs we have. Some patients seem to be susceptible to it; others seem almost immune to its effects. But a great many evil effects such as have been spoken of, in the way of abscesses, are due to the poison being carried on the point of the needle more than to the cocain itself. Carelessness in handling the needle I am convinced causes these untoward complications.—*C. P. Pruyn, Review*.

Swaging Aluminum.—Dr. Edmond's method. By Dr. M. R. Harned, Rockford. Aluminum swaged without annealing. Two counterdies are made, one for swaging the roots and one for swaging over the ridge wherever the counterdie is battered, or where the plate does not fit take little roll of moistened paper on the counterdie and place plate into it and swage. It is claimed that better adaptation is secured in this way than by the old way.—*Dental Review*.

Crown.—Using crescent tooth with platinum backing, burnished and soldered in place; then bevel the root labially and lingually from the center. The root canal is then enlarged for the pin, and soldered to a piece of platinum plate, fifty gauge, which has been bent to conform to the end of the root; then burnish to conform to the end of the root. The tooth then formed as to occlusion, waxed to pin and cap, invested, and any space between cap and tooth filled with solder.—*C. J. Underwood, Review*.

Why the Logan Crown is a Root-Splitter.—The Logan is a great root-splitter, simply because it is so easily bent by occlusive force, and if the pin did not bend the root would almost never split. The fulcrum occurring at the peripheral cervical edge, and the point of resistance at the apex of the pin, if the pin bends in the root the point of resistance is removed from the apex to the center or near it, giving the

same leverage or splitting force as a pin one-half as long as the Logan.—*H. S. Lowry, Digest.*

How to Get Good Joints in Setting Crowns.—When setting Logan crowns I endeavor to effect as perfect a joint as possible, and to fill up whatever space may be left I employ twenty or thirty thicknesses of No. 4 soft gold foil, and when it is set burnish perfectly to the margin of the root. The great difficulty of getting the crown and root in perfect alignment, so that there shall be no opening for the lodgment of food and secretions, I think is obviated by a properly fitted band burnished to the root.—*G. A. Bowman, Digest.*

Anchorage for Amalgam.—Amalgam requires broader and deeper anchorages to hold it in place than does gold, and this fact should be noted particularly in those cases on molars where the cavity passes so far mesially and distally as to curve somewhat towards the approximal surfaces. These are the cases where amalgam is so often seen to curl away from the cavity at the extremities, admitting a leak around the filling. If amalgam is to be held securely in position, in buccal or lingual cavities, it must be placed in broad, dovetailed anchorages.—*C. N. Johnson, Cosmos.*

Higher Grade Dental Association.—We have a still higher work before us, and that is the establishment of an organization representing the best thought, the best work, and the highest grade of men in our calling. When this is accomplished, then will be raised a standard for all men to follow, and the present indifference will vanish under the power of a great moral force. This will come, it must come, and not until then will dentistry be worthy the name of a profession and be an honor to our civilization and an increased blessing to humanity.—*From Editorial, International Dental Journal.*

Wash for Pyorrhea Pockets.—In my office I use tar water and hammanelis, half and half. I always have it warm. In making the application of nitric acid, I use the oleo-stearate of zinc. Vaseline, and things like that, are disagreeable to many patients. It is always a nice thing to roll up some absorbent cotton, or something of that nature, to try and protect the tongue and lips, and to keep the acid from getting into the mouth. I also do that with cocain. I have always tried to catch it in the bibulous paper, and not let it get into the mouth. I think we should keep the taste of all drugs away from the patient as much as possible.—*Dr. Good, Dental Review.*

Dental Caries.—Williams has cited a case in which streptococci were found in great numbers in a mouth in which caries was prevalent.

As these organisms will grow either in albuminous or carbohydrate media, it is not impossible that they may cause rapid transformation of carbohydrates into lactic acid. Caries may be regarded as in the main a disease of the posterior teeth, which, when well established, infects in turn the anterior teeth. Its cure lies in perfect filling, and in the maintenance of perfect cleanliness, in which antiseptics are useful adjuncts. Any departure from this rigid rule will be likely to result in a corresponding amount of dental caries.—*O. E. Inglis, Cosmos.*

Combination of Logan and Richmond Crown.—I simply use the crown of the Logan. I cut my pin off through the countersunk portion, and fill out the countersunk part with 22 k. gold. I prepare my floor thoroughly, and pin the same as I would for an ordinary Richmond, soldering the two together. That, I claim, gives you the strength of the Logan crown. It gives you greater strength, because the strain is not centered on two small pins and soldered on, the side of the backing, but is centered more at the base of the crown, where the pin is run into the porcelain portion. It gives you that protection which the Richmond gives you, covering the root from all penetrating secretions.—*L. J. Stephen, Dental Review.*

Predisposing Causes of Caries.—As general predisposing causes may be grouped all influences or diseases which either lessen the inhibitive forces naturally existent in the oral cavity, or induce in the patient an indifference to oral hygiene. It is quite possible that the demand for phagocytosis in other parts (as, for instance, in tuberculosis) may lessen the number of phagocytes in the oral mucous membrane, or that some vital resistant principle resident in the saliva may be lessened in quantity, as has been suggested by Black. The composition of the saliva may be altered in disease, the local predisposing causes are faulty structure, form, and arrangement of the teeth, loosened gum-margins or pockets, and imperfect hygiene.—*Otto E. Inglis, Cosmos.*

Pulp Removal for Cure of Loose Teeth and Pyorrhea Alveolaris.—I have cured many a case of pyorrhea alveolaris and made a loose tooth firm by removing the pulp of the tooth and filling the root, in that way giving a better nutritional supply to the pericemental circulation. It is for these reasons that I say when the pulp has been removed from the interior of the tooth, at a certain age, the pericemental circulation will improve, and that tooth stands a better chance of being immune from loss by pyorrhea alveolaris than if it were left with a pulp that in case of nutritional deficiency or from other causes would be constantly robbing the pericementum of the nutritional protoplasm which it daily requires for its healthy maintenance.—*M. L. Rhein in Cosmos.*

New Publications.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH. By I. Norman Bromell, D.D.S., Professor of Dental Anatomy, Dental Histology, and Prosthetic Technics in the Pennsylvania College of Dental Surgery, Philadelphia. Published by P. Blakiston's Son & Co., Philadelphia. 1898. Price, \$4.50.

This book comprises 419 pages, of which 324 are devoted to anatomy of the mouth and teeth. First the author gives a general description of the mouth, bones of the mouth, the temporomandibular articulation and muscles of mastication.

Then follows a general description of the teeth, and blood and nerve supply, other structures within the mouth, the gums, mucous membrane, alveolodental periosteum, glands, ducts, etc., receive attention and then the study of the superior and inferior teeth, calcification, eruption, surfaces, ridges, fossæ, grooves, etc., is taken up.

The pulp cavities are next considered, then the deciduous teeth and the development of teeth. Part II. is devoted to histology, and treats of general histology, tissues of the body, epithelial, connective, muscular, and nervous tissues, the mucous membrane of the mouth, lips, cheeks, gums, glands and ducts of the mouth, lips, cheeks, hard and soft palate, tongue, and salivary glands.

Muscular tissues of the mouth, lips, cheeks, soft palate and tongue are considered, and lastly the tissues of the teeth, enamel, dentin, cementum, tooth-pulp, and alveolodental periosteum. Although the author modestly remarks that there has been no attempt at originality, we find original work evidenced in the book. The illustrations, 284 in number, are, with few exceptions, the original work of the author, being reproduced by photograph from the actual subject. These are of inestimable value, as they show the exact construction of tissues under consideration, and assist so greatly in elucidating the text. The text is written in an interesting style and admirably arranged.

We have nothing but commendation for the work and assure our readers that it must be seen to be fully appreciated.

Dr. Bromell is to be congratulated on bringing out so valuable a book, and it deserves a large sale. No dentist can afford to be without it.

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CONTRIBUTIONS.

A Lesson in the Recuperative Power of Bone Tissues.*

BY M. H. FLETCHER, D.D.S., M.D., M.S., CINCINNATI.

IN speaking of The Jehova, the Prophet Isaiah has said: "Whom shall he teach knowledge? and whom shall he make to understand doctrine, them that are weaned from the milk, for precept must be upon precept, precept upon precept; line upon line, line upon line."

The foregoing suggestion of the laws of mental philosophy holds good to-day as truly as in olden times, for most of us only remember by repeated awakenings, and this is my excuse for bringing before you this evening the lesson I have recently been strictly reviewed upon by that beloved, but most arbitrary of teachers, old Dame Nature.

It came about in this way—Mrs. X., age 45, applied to me ten months ago for relief from an unsightly deformity, in the shape of exceedingly prominent and irregular teeth, partly congenital and partly acquired by pyorrhea alveolaris; she was told that such work to be successfully accomplished must be with patients the age of her grown daughter, who accompanied her, or for children from the age of seven to fifteen, and that while

* Read before the Odontological Society of Cincinnati, November, 1898.

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it was possible that her teeth might be gotten back into their normal position, that an unsightly and uncomfortable retaining appliance would have to be worn constantly thereafter, in order to retain them in place. In this opinion her husband fully concurred, and he is a man fully conversant with the laws of physiology and pathology, but "the woman of it" said, well, if there



FIG. I AND II.

Figs. I and II represent the upper and lower teeth respectively, before treatment.

is any chance at all to have it done, I wish to undertake it—which was complied with, with a most satisfactory result up to the present time, as the models will show.

In the lower jaw, the left lateral being almost entirely squeezed out of the arch, see Fig. 2, it was extracted and the space closed up completely as can be seen. There was no impres-

sion taken of the lower jaw in the beginning. This part of the work was done with no other appliance than that of silk floss, such as we all use at the chair, and this, too, with as much ease and rapidity as any case ever coming under my notice. And now comes the most important part of the lesson, viz., that no retaining appliance has been used on the lower teeth since the removal



FIG. III AND IV.

Figs. III and IV represent the same case after treatment.

of the straightening ligatures five months ago, and the teeth are apparently in the same position to-day as when the ligatures were removed.

In the upper jaw, the second, right bicuspid being dead and badly broken down, was removed, see Fig. 1, and thereby room gained for the replacement of the teeth which were out of line ; this part of the operation required a more substantial appliance

than silk cords, but much of the effective work was done by the use of floss, with the result which can be seen by comparing the "before and the after taking" models.

These teeth are held in place by a platinum ligature, and have shown some tendency to return to their old position, but I believe they will need no appliance aside from the light retaining wire which they now have on.

By comparing the two upper models, Figs. 1 and 3, it can be seen that the space where the bicuspid was extracted is completely closed, and that the whole of the front teeth have been drawn back to some degree.

Accompanying the straightening process, and possibly a thing which had much to do with what seems to be a success, was a most thorough treatment for the pyorrhea, consisting of a thoroughness in removing the deposits from the roots of the teeth, and frequent injection into the cul-de-sacs about the teeth of antiseptic and stimulating medicines. In due time the gums showed a most marked improvement in their appearance, changing from a dark, angry color to a normal pink and the teeth not involved in the straightening process became much firmer.

Now the question is, how long will this improved condition remain?

The following quotation regarding the age at which regulating work should be done, is from the 1892 edition of Harris. He says, "The position of a tooth may sometimes be altered after the eighteenth or twentieth or even thirtieth year, but it is better not to delay the application of the proper means until so late a period."

Dr. S. H. Guilford says on the subject, in his 1889 edition, "The correction of irregularities, under favoring conditions, may be begun and carried forward successfully through a wide range of years. It may be undertaken as early as the eighth or ninth year, and again may yield successful results as late as the thirty-fifth year or later. The most favorable time for correction in cases as they usually present, is between the ages of thirteen and eighteen. Earlier than this the operation is advisable under certain circumstances and later the difficulties increase with the years."

The above I take to be fair samples of the opinion of writers and lecturers on the subject, and such statements coupled with

the fact that the process of straightening irregular teeth, is universally associated with youth, would tend to exclude from one's thought, the idea of trying a case beyond the age of twenty, with the expectation of success.

The report of the above case, and the fact that it has been presented here for your consideration, would indicate to you that I, at least, entertain hope of success in a class of cases I have never before undertaken, and this hope is strengthened by remarkably good results in a second case of similar character begun three weeks ago.

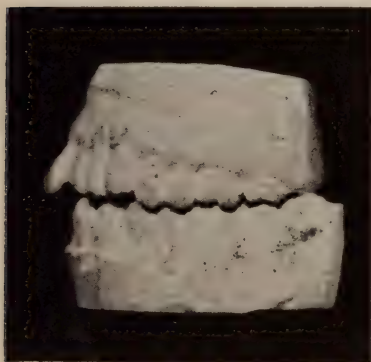


FIG. V.

Fig. V represents a side view before treatment.



FIG. VI.

Fig. VI, side view after treatment.

Before closing this report, let us consider a few facts regarding bone tissues.

First, it is a fact that wounds of bone heal readily at almost any age—the exception being that of extreme degeneracy of vitality.

Simply because a patient is eighty, one does not hesitate to reduce a fracture, but proceeds to splint and bandage, and expects the fracture to heal in due time, nor do we refuse to treat dental abscesses and pyorrhea in old people. If the patient is fifty or under, and there are no complications, there is no question, even if the patient is sixty.

Now why should we hesitate to attempt the correction of irregularities, either congenital or acquired, at the age of thirty to fifty?

After having gone through the above self catechism, I took me to Sharpe, Shaffer and others, to revive the lessons of days gone by, and found many things new to me, because I had forgotten, or most likely had never known them.

Hence the necessity I feel of "Line upon line," "Precept upon precept," in order that I may do as well as can be done for those demanding professional services.

It is not my purpose to go over a lot of well known descriptions of the physiology of bone, and its growth and development in detail, but to give you the most prominent impression that remains with me, after reviewing the subject in text and clinic, and this is the fact, that bone tissues are most remarkable in their powers of resorption, repair and reproduction, and I venture the statement that no other tissue of the body far exceeds it in these respects.

Just think a moment; there is not an adult mammal, whose bones are not many times larger than they were. When first ossified the femur and humerus of any normal sized human being could hold in its marrow cavity two, three, or may be more of the same bones, of the same person, when at the age of six months or one year; this means that each bone of the body has been resorbed and replaced with new material several tissues over. It is easy to imagine growth and increase, in soft tissues, but not so easy in such dense material as bone, but so long as life lasts, nature may be induced to carry on these processes, for she always has the organs at hand, and only needs the proper stimulant applied to produce desired results.

After having written the foregoing, I came across the following summary of the "Influence on bone," in an article by Dr. M. H. Cryer, in this month's *Dental Cosmos*, which pertains directly to the subject in hand, he says, "After the birth of the child, muscular action and various forces have direct influence over the change of the bones, according to the following general laws:

"The normal application of forces in developing bone results in the normal development of the form of the bone. The abnormal application of forces under the same circumstances result in the development of an abnormal form. Abnormal applications of forces to bone in adult life will also change and modify the shape and character. The bones becoming changed, the whole body is modified according to the change in the bone-tissue."

Toothless Twentieth Centenarians ; or. Vegetarianism, Which ? *

BY H. T. HARVEY, D.D.S., BATTLE CREEK, MICH.

WHY are there forty thousand dentists in the world to-day, when fifty years ago there were perhaps not over one thousand ? Why this tremendous increase of nearly one thousand per year ? We are informed that, prior to this century, our medical brethren, together with barbers, were able to attend to all the dental disaffections of the people. That we are living in the most significant era of modern civilization and setting the most rapid pace of all other races, I do not think you will deny. That disease in its every aspect is making just as rapid strides, I do not think can be contradicted. That there is a marked increase in the decay and consequent loss of the teeth in civilized countries, resulting from disease, either general or local in character, there can be no doubt.

Are we, as a race, going down physically, mentally and morally ? In support of this proposition, I will give a few incontrovertible facts. There are at the present time, in the United States, nearly three times as many lunatics ; three times as many imbeciles ; twice as many drunkards ; three times as many epileptics and twice as many criminals per thousand inhabitants as there were fifty years ago. Please note that this increase is not simply numerical, but one of proportion. With the increase of population there would naturally come an increase of insane and other defectives, if there were a gain in the physical stamina of the race.

If the improved knowledge in sanitation and various advantages in the conditions of life which civilized human beings at this time enjoy, were having an effect really to improve the vitality of the race, we ought to find the ratio of defectives, criminals, etc., as compared with sound and well controlled individuals, diminishing rather than increasing. An increase of 10 per cent. in the proportion of defectives, occurring within fifty years, would be a startling fact. It would mean, if continued long enough, complete race demoralization and extinction, but an increase of nearly 300 per cent., which is unmistakable

* Read before the Toledo Dental Society, January, 1899.

evidence that the human race, even in the most civilized lands, and where are afforded greatest freedom and the best conditions for physical, mental and moral health, which any country offers (the United States), is going downward at a most appallingly rapid rate, and this deterioration is not simply physical, but moral and mental as well. Disease has become more virulent than ever before. The great number of men, women and children confined in the counting-room, stores, factories and various sedentary occupations is developing a deformed creature, which may well be termed "the sedentary man," who is known by his round shoulders, his flat, hollow chest, weak heart, displaced stomach, puny muscles, and his lusterless eye. In former times cholera, the black plague, and other dreaded cyclones of disease acted as a stay to degeneracy. These diseases spent their force upon the weak. Now we are protected by a sanitary cordon. Treacherous diseases knock at our doors in vain. We cannot quarantine against tuberculosis, indigestion, heart failure, and the many woes of our own finding. What are the causes of these conditions? I do not wish to be known as an extremist, and will confine myself to reasonable causes, as they appear to me. From personal observation, the great cause of disease is excesses. That the use of intoxicating liquors, tobacco, and the increase of sexual vices are great constitutional deteriorating causes there is no reason to doubt, but that through the depraved, gourmandizing appetite of man, emanating from his debased lower animal nature, his evil habits of life, have their origin I am fully convinced. That constitutional deterioration, the result of improper nourishment, resulting in systemic disease, thereby lowering the vitality of the body, allowing germs of disease and decay to force into submission the strong and healthy organs, together with the teeth, resulting in their destruction, is evident. Decay of the teeth does not take place until this vital resistance is diminished to such a degree that they cannot combat the destructive influences of the germs of disease that come in contact with them. Flesh, together with other indigestible foods, such as condiments, pastry, woody vegetable substances, etc., are, with the habits of excesses, the great cause of indigestion, which nine-tenths of the American people are afflicted with to-day. Indigestion is one of the greatest causes of constitutional deterioration, resulting in the decay and loss of the teeth. Flesh is the most easily decom-

posed of all food materials, as you well know, both in the alimentary canal and in the mouth, and from which the greatest production of bacteria is obtained, resulting in fermentation, producing germs which destroy the structure of a tooth. Dr. Brophy, while discussing a paper I read at Elkhart, Ind., last September, touching upon this subject, said: "Man was intended to eat meat," and to prove that we are of the carnivorous species, referred to the cuspid teeth of man as a characteristic of flesh-eating animals. That man is not carnivorous by nature, is proved by the very shape of the external frame of his body. He has no curved beak; no sharp talons and claws; no pointed teeth; no intense power of stomach or heat of blood which might help him to masticate and digest the gross and tough flesh substance. On the contrary, by the smoothness of his teeth, the small capacity of his mouth, the softness of his tongue, and the sluggishness of his digestive apparatus, nature sternly forbids him to feed on flesh. Man's mouth and teeth are a mill, formed upon the gradual reduction plan. Our front teeth furnish a perfect apparatus for cutting our food. Our side and back teeth are for grinding and pulverizing food. Flesh foods require very little mastication, therefore, dogs, lions, etc., have teeth specially adapted for hatching and tearing meat. There can be no doubt that the use of flesh foods is one of the chief causes of dental decay. Little particles of meat get between the teeth and encourage the growth of destructive germs. The germs that destroy teeth are the same as those that cause the decay of flesh. It is better not to have dead things of any kind lying about in the mouth for the subsistence of germs. Keep it entirely free and clean from fragments of dead animals, and that can be most easily accomplished by putting nothing of the sort into the mouth. The monkey is a vegetarian, and has sound teeth, and I commend those who wish healthy and sound teeth to live on the monkey's diet—fruits, grains and nuts. To convince you that flesh food is disadvantageous from the standpoint of nutrition, I will quote you a few facts. The total nutritive value of lean beef is 28 per cent., containing 19.3 albuminous substance, 3.6 carbon, 5.1 salts. Mutton contains 28 per cent. nutritive value; poultry, 26 per cent.; whitefish, 22 per cent.; salmon, 23 per cent.; veal, 37 per cent., and pork 67 per cent., but requires, in the roast, 5 hours 15 minutes to digest. The average total nutritive value of the seven varieties

of flesh foods referred to is 33 per cent., and the average time for the digestion of the same is 4 hours 42 minutes. No wonder when one leaves the table after a hearty meal of Christmas fowl (and it is all "foul") that you feel that you have had a square meal. The food has not had time to digest, nor the faithful stomach an opportunity to rest, until the dose is repeated, and, ultimately, we find our stomach broken down, and we then wonder how it happened. Why not take a meal of fruits and nuts, or of grains and nourishing vegetables, in which there is nearly three times the nutritive value, and which requires less than half the time to digest, with the supreme knowledge that you are not supplying subsistence to numerous germ colonies, which will ruin your health and destroy your teeth. Rice has a total nutritive value of 87 per cent., and requires only one hour to digest. Fruits, such as grapes, apples, pears, plums, cherries, etc., average about 15 per cent. in nutritive value and require about one hour and a half in which to digest, at the same time proving a perfect germicide for the teeth, mouth and alimentary canal. Nuts and grains are rich in nutritive elements and fats, both averaging 75 per cent. and are easily digested. Bad combinations of foods is another existing evil, which proves nearly as detrimental as the indigestible mass of flesh foods above referred to.

Vegetarianism is conducive to both health and longevity. Health is normal; health is absolute. There is but one nature. "The wisest care and fullest upbuilding of the body and its powers is a sacred duty, not lightly to be disregarded." It is a very rare thing to find a dog with decayed teeth. Wolves, wild horses and other creatures that live close to nature, have good teeth. Savages and primitive people, whose habits are simple, have good health and good teeth (except where they have come in contact with civilization, when they, too, have become contaminated), and do not require the services of a dentist. The examples of longevity and good health are all to be found in the lowly walks of life. Among peasants and common laborers, and a study of centenarians, has shown them to be without exception, persons of simple habits, and a majority of whom were abstainers from stimulating foods and drinks of all kinds.

Our prize-fighters, long distance bicyclists, swimmers, long distance walkers, cannot use meats and stimulants and win their contests, and records show that vegetarians always win contests

where vital endurance plays any part. I was interested in reading one day this week of a prima donna in Detroit, who has been a strong vegetarian for the past eight years, through compulsion, and attributes the saving of her life to her reform of diet. The world is waking up to the fact that something is radically wrong. The medical profession is casting side glances at the dietary problem. The people must have relief. The fetters of false ways, evil habits and depraved tastes are tightening about them and producing a demoralizing condition in society. Where is the remedy? Begin at the foundation, build up new healthy tissue with pure blood coursing through your veins, by using wholesome nourishing foods, and by correct habits of life. The race will then improve mentally and morally, and not until then.

Are there prospects of our race becoming toothless? I think there are, and our only salvation is the adoption of a vegetarian diet and exercise, through which medium the principles of hygiene and sanitation can be promulgated and adopted by the victims of error.

Operations for the Cure of Chronic Empyema of the Antrum.*

H. J. CUSTER, B.S., D.D.S., COLUMBUS, O.

EXPLANATORY of my topic, it would appear well to say, that the first and most important part of my paper consists of the description of an operation for the rapid cure of chronic empyema of the antrum, as performed by Dr. Luc, of Paris.

Following a discussion of Dr. Luc's method, I shall give the technic of an operation, the component details of which I have performed in different cases, but have not yet combined in any one case.

Dr. Luc's operation differs widely from others and was first performed by him about two years ago, but I believe, however, that practically the same operation was introduced some four years ago, by a New York surgeon whose identity I am unable to establish.

The chief advantages of the method are, the thorough inspection afforded of the antrum, and the removal of fungosities

*Read at Ohio State Dental Society, December, 1898.

and other obstacles usually found in chronic empyema, while no obnoxious materials can pass from mouth into antrum, or medicaments in the opposite direction, as occurs in some other methods.

Dr. Luc operates by making a horizontal incision, $1\frac{1}{2}$ centimeters long, in the canine fossa, on a level with the antral floor. From each end of this incision another extends upwards about the same distance. The mucous membrane, with periosteum, is now detached from the bone, which with the antral membrane is removed by a bur, chisel and mallet, or cutting forceps. Once inside the antrum, the fungosities are removed by means of a sharp curette. This curetting usually causes rather brisk hemorrhage, which is controlled by tamponing with gauze.

After curetting, the antrum is tamponed for a few minutes with 20 % chlorid of zinc gauze, to destroy any particles of vegetations that may have escaped the curette.

In order to provide for drainage and irrigation, an opening, one centimeter in diameter, is made through the internal wall of the antrum, at its most anterior point, that is on a level with the floor of the nasal fossa. This opening is made by working through the antrum, and requires the cheek to be strongly retracted.

Dr. Luc originally operated by opening the cheek from the commissure back to the masseter muscle, but he now operates without external incision.

The drainage tube passes through this opening into the inferior meatus, with the end appearing at the nostril. The tube used is soft gum, $\frac{1}{4}$ inch in diameter, with a funnel-shaped expansion on one end. This expanded end, placed within the antrum, serves to keep the tube in position and yet allows easy removal when a cure is effected.

When the tube is in position the buccal wound is closed by suturing the mucous membrane with five or six fine gut sutures. Quietude and liquid diet are maintained for about three days, when the mucous membrane is found united and irrigations are begun.

Daily irrigations of either a saturated solution of boracic acid, or a 1-2000 solution of formol, followed by 2 c. c. of iodoform in ether 1-10, injected through the drain by means of a long-nozzled syringe, constitute the treatment while the tube is in position.

After from two to four weeks the drain is removed and the same agents, only with increasing interval, are continued through the nasal opening, until discharge ceases. On an average a cure is effected in six weeks.

This is not a very rapid cure in comparison with those cases reported cured in ten to fourteen days by irrigating through a small perforation, or even by the natural opening. Those rapid cures by simpler means in all probability occur in those cases whose pyogenic membrane or fungosities are not pronounced, and where the antrum is free from septa, polypi, and other obstacles. In this connection, it is well to remark that Fillebrown has shown how a discharge from a frontal sinus is liable to find its way into the antrum. This fact should not be forgotten in treating any obstinate case of pyemia.

My notes do not give a percentage on Luc's entire clinic, but I was informed that fungosities in chronic empyema were the rule. Among nine antrums that were opened, on various occasions, I have seen marked fungosities in six cases, in two of which, the antrums were nearly filled. One antrum with and one without fungosities had bony septa that required removal, and one case with fungosities had also mucous polypi. Altogether I have been identified with sixteen cases, including four in my own practice, most of the remaining having been in the foreign clinics. These cases were treated either by the natural opening, by artificial opening into the nasal fossa, by small and temporary opening through alveolar process or canine fossa, or by large permanent opening in canine fossa. Among this number only one cure was affected within a month.

Without doubt some cases of chronic empyema are cured in two to four weeks by proper opening through the mouth or nasal fossa, or even by the natural opening, without inspection of the antrum. But not infrequently the treatment extends over several months and sometimes the case will not yield at all without surgical removal of various obstacles that occur within the antrum.

Those of us who have treated an alveolar abscess with a series of injections, without success, and then have attained a rapid cure after the surgical use of a sharp bur, can readily appreciate the value of removing abnormal conditions within the antrum by surgical means.

Considering also the good results following the judicious use

of the curette in the mastoid and frontal sinuses, as well as in general surgery. I should feel justified in making free temporary opening, other things equal, in any case in which the circumstances of the patient required speedy cure; in any case in which the use of ordinary measures proved ineffectual; or in case diagnosis was uncertain, and positive diagnosis does not always obtain, as is forcibly illustrated in those cases related by Heath, in which some eminent surgeons suspecting malignant growth, have begun the removal of the jaw, when the trouble was chronic empyema.

By inspection of the antrum we learn the most favorable place for drainage: we learn the condition of the ostium and perhaps find a foreign body, fungosities, bony septa, either partial or complete, mucous polypi, dentigerous and other cysts, necrosed bone, or foreign or malignant tumors.

Some of these would certainly and others probably require removal for the welfare of the patient.

Regarding the drainage system of Dr. Luc, whom I greatly respect, both as a gentleman and as a surgeon, it seems, for reasons appearing later, that drainage through the inferior meatus is not so effective as a proper drain through the mouth.

I have searched to some extent for statistics regarding the relative position of antral and nasal floors, but without success. However, I have examined a number of skulls, which with six observations made during life, make a total of 33 antra inspected. Among this number four showed the antral and nasal floors to be about even, while among the remaining 29 the floor of the antrum was lower than that of the nasal fossa. The depression of the antral floor was most marked in cases with high palate. The difference between the two floors, in one instance, amounted to about half an inch. Furthermore, among all illustrations that I could find, no illustration was observed showing the antral floor above the nasal. Therefore we are certain that in some cases, at least, drainage through the inferior meatus is not the best route so far as drainage downward is concerned, while the tube in the nose, is, I think, more inconvenient than a proper metal one in the mouth.

Regarding the flap that is lifted in opening the antrum, the question may be asked as to whether the entire thickness of the antral wall could not be successfully turned upward instead of cutting away the bone. In the case of a

healthful young man whose first molar palatine root had been forced into the antrum, the previous day, during attempted extraction, I cut through the entire wall in the canine fossa, with a thick scalpel, carefully guarded. I then turned the rectangular flap upwards until the bone fractured. The root was then secured, the antrum washed out with a warm solution of Listerine, the flap pushed back into position and the mucous membrane sutured with silk. As the flap bulged outward at the bottom, an iodoform pad was placed over it with pressure added by a firm bandage around the face. Four days later the flap was firm and more than a year later all appeared to be satisfactory.

Whether the bone can be saved when the lining of the antrum is damaged, as in chronic empyema, along with the attending debility, I am not prepared to say.

At present I prefer to proceed with the following method: First, sterilize the mouth by brushing with Listerine, because it is a good solvent and carries obnoxious materials away bodily. Then use corrosive sublimate, 1-4,000, to destroy remaining bacteria, and push the ether to prevent vomiting. Draw the cheek well out of the way by means of a retractor placed in the commissure, and not held by an assistant, but buckled to a strong cap tightly fitted to the head.

Begin a quarter of an inch above the first bicuspid root and cut through mucous membrane and periosteum, straight backwards for $1\frac{1}{2}$ centimeters: then upwards 1 centimeter from each extremity. Lift the periosteum and perforating the bone with a drill at the four angles, remove the denuded bone along with antral membrane, with a saw or thin-beaked cutting forceps. Use a moderately sharp curette to remove fungosities or polypi with small pedicles, and if there be any bony septa that require removal, use the dental bur, carefully avoiding any conical prominences over roots of teeth. Tampon thoroughly with 20 % zinc chlorid gauze, to destroy remnants of pyogenic membrane, and to stop hemorrhage in the meantime. During the interval establish drainage by drilling through the alveolar process, if that be the proper position, and fit the tube into place. Remove the gauze, and if bleeding recurs, tampon tightly again for a few minutes with gauze wrung out of hot water. Then close antrum by stitching mucous membrane with five or six fine gut sutures.

Maintain quietude, and liquid diet through a tube, until about

the third day, when the flap should be united and irrigations used. For the first two weeks I prefer a saturated solution of boracic acid—twice daily, followed by 2 c. c. of iodoform in ether 1-10 once daily. Later, increase the interval.

As to the exact place for drainage, that is determined principally by inspection of the antrum. If the dental arch be intact, or if a tooth remain to which the tube can be attached, I would then make a groove in the original opening, on a level with the antral floor, and cementing the lower end of the tube to a tooth, by means of a cap or band, stitch the flap around the end entering the antrum. Or, if the most dependent part of the antrum was over the place of a tooth that had been or should be extracted, I would then place the tube through the entire thickness of the alveolar process. If the patient wore a plate, I would still prefer the alveolar ridge, because it will accommodate a tube of large capacity. I would then make a depression in the plate to receive the end of the tube, and direct the patient to wear the plate during sleep. If the jaw were edentulous and no plate worn, the dental ridge would still be my choice, and I would have a plate made to wear over the tube.

The drainage tube is one of my own device that I began using about six years ago. For the alveolar process it is a round tube extending into the antrum $\frac{1}{8}$ inch, to prevent occlusion by swelling of lining membrane. This last $\frac{1}{8}$ inch is perforated to allow drainage into the tube, which is closed at the lower end, but not by a solid plug. For this purpose I use an inner tube closed at one end, similar to a cartridge shell. In this appliance I have a metallic reservoir, into which the discharge runs and from which it can be removed by the patient several times a day, and that without contaminating the mouth.

Originally I used this tube $\frac{1}{8}$ inch in diameter, but now I prefer $\frac{1}{4}$ inch diameter, to secure greater capacity.

When drainage is through the canine fossa the antral end bends inward and is $\frac{1}{8}$ inch in diameter, with a broad flat expansion, which lies over the alveolar process, to serve as a reservoir. This, also, is closed by an inner tube, and is within easy reach of the patient.

The advantages claimed for the operation after my modification, are, that perfect drainage is secured while the antrum is closed against infection from without; the irrigation and dis-

charge can be placed under control of the patient; in some instances a special opening for a drain is not required; and finally, the operation is all through the mouth, by which route it can be performed by the dentist, who familiar with economy of space would seldom think of external incision with the resulting scar, as I have repeatedly seen in oral surgery practiced by the general surgeon.

DISCUSSION.

DR. WM. KNIGHT: Those who have treated empyema of the maxillary antrum (the term empyema being the name suggested by O. Weber for the disease formerly known as abscess of that cavity) need not be reminded of the extremely tedious course usually presented by this complaint. Now if we can by any new method of treatment hasten the suppurative process and secure a more certain and rapid return to a healthy condition of the diseased parts, it will be conferring a boon upon these chronic sufferers.

Before a new method however, can be accepted it must stand the test of time, and if then it can be shown to possess advantages over older methods of treatment it will be accepted with grateful acknowledgments of the profession at large.

Gaining an entrance into the antrum through its anterior wall is an old practice. M. Gerdès in 1850 would, in removing cysts and foreign bodies, make a kind of a trap-door of the anterior wall of the antrum and turn it back leaving the periosteum attached, which would thus act as a sort of a hinge.

If no drainage were needed, which is not required after the removal of a foreign body, the partly detached piece of bone would be replaced.

Thus far Dr. Luc's method can not be said to be new, but the succeeding step of his operation effecting a drainage into the nasal cavity, from the interior of the antrum is so far as I am aware a new procedure. What merit it may possess will be a question of doubt until it can be proven to possess advantages over older methods.

It is evident that in many instances perfect drainage of the antrum cannot be obtained by Dr. Luc's operation. The specimens that have been passed around to-day show conclusively that the floor of the antrum is very frequently lower than the floor of

the nose, consequently no drainage into the nose could be complete in such instances.

Dr. Custer's modification, consisting of drainage through the alveolar process would be much more likely to effect perfect drainage. The floor of the antrum is however sometimes above the level of the floor of the nose.

Cattlin in his paper to the Odontological Society of London, Eng., published in 1869, gives some fine illustrations of the antrum, in one of which the floor of the antrum is considerably above the floor of the nose. In such instances Dr. Luc's method would of course secure perfect drainage of the antrum. It has only been within recent years that this disease has attracted so much attention.

Lenox Brown tells us that during his association with Dr. Morrill McKenzie, extending over several years, he had never seen an antral disease at the clinic, but during the last seventeen (17) years sixty-eight (68) cases have come under his observation. This increase in the number of cases observed seems to be the case in this country as well as abroad. It is probable that formerly many cases were not recognized and the sufferers were treated for other affections, especially for gastric disturbances.

Heath in his work upon the jaws, mentions instances of this kind that have come under his observation. The method of treatment of this affection is likely to vary in its details according to the character of the clinic, or the operator to whom the patient applies for relief. If a patient of this kind went to a dental clinic it is probable the attention of the surgeon would be directed at once to the mouth. Diseased teeth in connection with the antrum would be extracted and an entrance into the cavity secured by perforating the alveolar process. If the patient applied to a throat or nose clinic the operator there would enter the antrum through the nose by perforating the inner wall just under the inferior turbinated bone. If it be necessary, as is sometimes the case, to have a full exposure of the anterior part of the maxilla, this can be attained by cutting through the lip in the median line of the mouth. It can never be necessary to cut through the commissure of the mouth as practiced by Dr. Luc. This must be called bad surgery. It is almost impossible to get perfect junction again when the commissure of the mouth has been divided.

In regard to the after treatment in those cases in which drainage is required, Dr. Custer's method appears to be an excellent one. It is not absolutely new, that cannot be claimed for it, but the adjustment and arrangement of the tube with the receptacle for collecting pus or other fluids oozing from the antrum and at the same time protecting the antrum from the entrance of foreign bodies, such as foods, is an ingenious device.

The diagnosis of empyema of the antrum is by no means always an easy affair. Out of sixty-eight (68) cases nine (9) per cent. were found in which pus was not present, after having been so diagnosed by different surgeons of experience.

A few years ago I treated a young lady who had pronounced swelling of the anterior wall of the antrum with the symptoms of pus within that cavity. She was placed under chloroform and the anterior wall opened, and to my surprise there was no pus. Some days afterwards she returned and strange to say, the pain she had had in the region of the orbit and temple had disappeared and they have not returned.

In some cases mere tapping of the antrum is sufficient to effect a cure, but in some instances there are hard masses of dried mucus or pus which cannot be removed in this way nor will forcible injections of warm fluids be sufficient to bring them away. Under these conditions we must have a large opening into the antrum and this is more readily effected by entering the cavity through its anterior wall, we can then thoroughly explore the cavity and remove all foreign bodies.

The use of pyrozone in the antrum I think should be abandoned. I have found it irritating and wish on this occasion to protest against its use in antral affections.

Before closing I wish to say that the discussion on dental nomenclature was very interesting, and in this connection I want to make an exception to the term pyogenic membrane. There is no such membrane. The term should be relegated to the past. Its conception was based upon erroneous pathological views.

DR. MATLACK: If we are going to take this disease from the specialist of the nose, we must supply ourselves with the instruments which he has been using, the nasal speculum, forehead mirror, abscess syringe with special prepared needle, etc.

When we are looking for empyema, we must have a syringe, and the needle will have to be specially made, because I think

there is none on the market with a large enough opening which will fit a hypodermic syringe, and placed into the antrum through the nose and just on a level with the inferior turbinated bone. You will see the bone is very thin there, and the syringe will enter very readily. The point of the syringe must be grooved so we can press down inside, withdraw, and if pus is present it can be seen. If the lamp shows no shadow we can use this to see if there is pus.

The age at which people are affected with empyema of antrum varies. A case of a child three weeks old, it may seem strange, but we draw conclusions from it, after diagnosing we found pus, and the case was treated by the methods spoken of, and cured. By pressure on the nose, pus escaped from the natural opening, and then the opening was made. A new tube for entering through the alveolar process, usually from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch in diameter, and to the bottom a hinge or slide has been attached. The bottom can be rotated as it were, so the patient can clean it out himself. This tube is attached by ordinary clasp such as we use in clasping teeth either to second molar or bicuspid. The tooth always removed for entrance is the first molar. The object of the slide or hinge bottom is to prevent the food from coming in. In quite a number of cases we found that nine out of ten of those examined had the lowest point of floor of antrum opposite the palatine root of the first molar.

After making the opening cauterize thoroughly with silver nitrate, 20 grs. to an ounce, after which pack antiseptic gauze, and even then the opening can still be made through the palatal surface and the other opening through the nose.

DR. TAFT: I was very much pleased to hear that statement in regard to the pyogenic membrane, that is an expression which has been used in both professions. There is no such thing as a pyogenic membrane, a pus producing membrane or sac. Let us understand this and never use that expression again.

DR. W. D. SNYDER: I would like to ask whether the surface of these cavities is simply a raw surface without any lining? I was taught that there was somewhat of a lining to these cavities.

DR. KNIGHT: I think doctor, you misconceive the question. The antrum of course, is lined by mucous membrane, but this may become inflamed from any irritation, and whatever may be the cause, it will be followed by suppuration from infection, and just

as we have in all suppuration there is a zone of granulation tissue that acts as a barrier to the further invasion of bacteria of suppuration, staphylococcus. Now there is no such thing as a membrane in that cavity or in any other that is in a state of chronic suppuration. Now when you curet the condition and restore the parts to their normal condition all process of inflammation subsides and you have a cure. As far as I understand it there is only one form of abscess which has a membrane, and that is the cold abscess.

There are little sacs which form on the teeth sometimes, they are cysts, they have a wall, it is simply an expression usually of some duct, it is no secretion.

DR. SNYDER: When I spoke of this lining I hoped you would not understand me to have meant the cavity wall in a natural condition, but the wall of pus cavity formed at apex of tooth. This artificial cavity is formed by continued abscess. Cystic formation might be a good word to use in the place of pyogenic membrane. We could call it a cystic lining membrane. I have always found it necessary to break down or destroy this before we could have granulation started to heal the disease or break it up.

DR. TAFT: In abscess in the alveolar cavities it is not always that the coagulated lymph is wholly connected with the tooth, if so it is usually in teeth of two roots. Sometimes this material adheres to the walls of sockets and you can take it out, but it is not a membrane. It is not really a sac that is formed.

DR. BUTLER: In regard to the character of tissue which makes up this sac which is infiltrated, it is not a pus forming tissue, but simply a coagulated mass of lymph. Now when we come in contact with this abnormal tissue which has been formed there in the bone, Dr. Snyder says we are taught that it must be broken up if we expect to get repair of tissue. That is exactly what the surgeon does. There is a small portion of cancellous bone which is dead that must be broken up, just the same as necrosed bone is removed from any other part of the system. It is best always to have a fresh surface for nature to bring about repair.

DR. ———: I have had a large experience in the treatment of this disease. My first object after diagnosing is to remove all the conditions which have tended to cause this disease. It is most always caused by the collection of pus on some tooth. The disease has presented itself to me in various forms. One lady who

was supposed dying from consumption, could not live possibly for more than two or three months, her breath was intolerable. I told the young lady to come to my office just as quickly as she could and I would cure the trouble in about ten days. I told her I was positive it was not consumption. This proved to be the case: Both molars were diseased. My treatment there was simply a cleansing one, warm water boiled with a little salt, this was the treatment for perhaps two days, then I used potassium permanganate. I toned her up with iron, and within ten days she was nearly well.

The most serious case, and which could not be cured was brought about by an abscess on bicuspid of left side. The patient neglected it, and when he came back he was compelled from exhaustion and pain to submit to an operation. It proved to be a malignant polyp. It passed into the hands of a specialist, an operation was submitted to, and the disease was not cured, and the man died finally with an abscess of the brain.

I cure by simply removing the cause in the first place, quite as moderately as I can, and the cases get well. The last case I had was about one year ago. It was mystifying, the teeth were all right, the face enlarged in a few days. I located it finally in the right superior second molar. For fear that he had had some continued condition which had caused the pulp to die, I opened the pulp chamber and found it alive. On treating the pulp there was a little cessation of pain for a few days. Came back in a few days for treatment, and I removed the tooth and opened into the antrum, and of all the horrible cases that I ever saw this was the worst. I used Formozone. I used it in a diluted condition, with one application of formalin. Case was cured inside of ten days. I give you these to show you that the disease is curable, and that you do not want such terrible methods, and you do not want drainage tubes, simply wash it out with a little syringe.

DR. CUSTER: I will only take one moment to say a few words in regard to the discussion on pyogenic membrane. I will admit there is no membrane secreting pus such as a gland secretes. But I used that term to designate those diseased parts which are so necessary to be removed. Regarding diagnosis, I would have been very glad to have gone into that part, but I was requested to make my paper brief. In regards to appearance of pus in the middle meatus in the region of the ostium as being diagnostic of

the antral affection, while this is true to a certain extent, still we may have pus in that same locality coming from the frontal sinus or ethmoid cells.

Odontological Society of Cincinnati.

Regular monthly meeting, Nov. 25, 1898, President Rose in the chair.

The special order for the evening was a paper by Dr. M. H. Fletcher, viz:

"A LESSON IN THE RECUPERATIVE POWER OF BONE TISSUE."

(For the paper see page 113 of this issue.)

DISCUSSION.

DR. MATLACK: I would like to ask Dr. Fletcher if he ever undertook to regulate a case at the age of thirty-five years, pyorrhea not being present?

DR. FLETCHER: No sir, not as late as that. The age of twenty-five or six, I think, is the latest I ever undertook, and did not have very good success with it. I think I could do better now, with the experience of later years and with the improvements in appliances that have been brought out by various men throughout the country. The whole subject, I think, has been much agitated and adjusted to scientific standards in a way it had not been ten or fifteen years ago, so that I believe the chances are much greater now for success in cases that have no pyorrhea, or even those that do, at ages past twenty-five or thirty.

DR. STERN: Have you ever undertaken a case in advanced years where pyorrhea was developed or a flow of pus brought about, by regulating of the teeth?

DR. FLETCHER: No, sir. I never had that result.

DR. STERN: I personally knew of a case where that happened, and where the condition has existed ever since the teeth were tampered with. It is only occasionally that the exudation takes place, but it occurs from time to time and can be overcome only by constant treatment.

DR. H. A. SMITH: The success claimed in the case cited by Dr. Fletcher brings up the pathology of pyorrhea alveolaris. I

have always supposed you could not move teeth unless the periodontal membrane was present and functioning, that the irritation produced upon the periodontal membrane by slight continuous pressure induced the development of osteoclast cells whereby resorption of alveolar tissue was effected. On the other hand, it is supposed the periodontal membrane in chronic cases of pyorrhea alveolaris is entirely absent. How do we get resorption of the alveolar process? If these teeth were affected by pyorrhea, then according to the common understanding of the pathology of pyorrhea, we have not the resorbent organs or tissue which induced resorption, for the development of the resorptive cells was entirely absent. If these teeth were subject to chronic pyorrhea we have an enlarged socket. Supposing this is true, we not only have an absence of the periodontal membrane, which gives some room for movement, but we have also a loss of tissue which gave room for the movement of the teeth very freely. Having accomplished it in that way, should the teeth possibly elongate, still that would give more room; they would move freely. So far as the movement of the teeth in those of advanced years is concerned, I think it can be shown that if done carefully and sufficient time given to it, no difference what the age if the teeth have healthy tissue about them.

DR. F. A. HUNTER: It is a revelation to me that such results could be accomplished, not only at that age but that teeth can be regulated with any degree of success that have been affected with pyorrhea. Again, the term pyorrhea means a great deal or nothing. So-called pyorrhea has so many different phases, all classed under the one different name. Pyorrhea alveolaris means simply a discharge of pus from the alveolus. We have cases of pyorrhea where there is no discharge of pus. There are other cases termed pyorrhea where there is simply a local accumulation of tartar that does not go very far up the root; these latter are not true pyorrhea often when so spoken of. Other cases such as Dr. Peirce speaks of, we have always a brownish deposit near the apex of the root first, and as he says, without any pain. As I say, there are so many different phases of it, that is hard to differentiate; and in this case I suppose it was due altogether to an accumulation of so-called tartar; and that was the irritating cause.

DR. FLETCHER: If I may be allowed, I will explain the con-

dition of this pyorrhea. I have used the term under the definition that Dr. Hunter gave a moment ago, a condition where pus exudes from the socket of the teeth about their necks. If the case be examined it can be seen that there is quite a recession of the gums, a good deal of the bone having been destroyed. There was much pus present, and it was a clearly defined case of what I would call pyorrhea, as much so as any I have treated in a long while.

DR. HUNTER: Did the pockets extend any considerable distance towards the apex?

DR. FLETCHER: The superior central was so much out of line that I could get the instrument almost to the apex from posterior lateral surfaces. I only undertook it because the woman insisted upon my trying. Her husband, a prominent physician, coincided with me, and said he would leave the matter entirely with me. I have learned a very good lesson.

DR. HEISE: Has the pyorrhea been cured?

DR. FLETCHER: Yes sir, as long as you keep the tartar off.

DR. HEISE: Has the pocket closed up?

DR. FLETCHER: Yes, sir. Each time she came I washed out the pockets. I have a preparation of alcohol, tincture of iodine, and a little oil of cinnamon, though I don't know what good the oil of cinnamon does; but I use it. I put more reliance on the iodine than anything else.

DR. HEISE: In regard to the movement of teeth at that age I don't have any doubts myself, because I have done the same thing a number of times. In regard to Dr. Smith's statement, he seemed to question the ability of the parts to bring about absorption of the alveolar bone. That to me does not seem so very difficult, because what do we have in the case of implanted teeth? You implant a tooth, and just in those cases where you haven't the pericementum is where you get the absorption, not only the absorption of the bone itself but the absorption of the root, still harder to absorb. I have seen a number of cases where after implanting teeth there was absorption clear down to the enamel. What does it? The giant cells must be present, where you do not have the periodontal membrane. Even in those cases where you have pyorrhea at advanced age, you can secure the union and rebuilding of these parts if you bring about an aseptic condition, and put them in their natural and normal relation to one another.

I have no criticism to make of this case of Dr. Fletcher's. It is done very nicely in every way; but I don't think he has done enough to bring about a proper occlusion of the teeth, which I would insist upon for the simple reason that the lack of the same will induce the pyorrhea to return again, and the teeth will not hold their own. I would grind down some teeth even if necessary to destroy the pulp in some of them, in order to bring about a perfect occlusion.

DR. H. A. SMITH: I do not intend to be dogmatic in making the statement that you cannot have resorption without the presence of the peridental membrane. I only referred to what we are taught. Certainly it is possible to have bone tissue throw out cells to absorb foreign bodies; but is it possible for bone tissue to resorb itself without the presence of peridental membrane? All the authorities say you don't succeed in the resorption unless you have the presence of bone osteoclasts; and they are proliferated from the peridental membrane. And in thus stating what is taught us, I am not telling what is accomplished, because this latter would seem in contradiction of that doctrine; but the behavior of these tissues under pressure is a very great study. As to the resorption or absorption, if you choose, that is a different procedure, because then the bone is on the defensive and is getting rid of a foreign body.

DR. HEISE: Last winter, while in Chicago, I attended a clinic given by Dr. Younger, who presented a number of cases similar to this of Dr. Fletcher's. As we all know, Dr. Younger makes the statement that age is no barrier to the regulation of teeth or cure of pyorrhea, unless the person is in a regenerate condition. He does make that limitation. He does all his regulation with the silk twist and sea-grass ligature; and he makes the claim that as long as you have some of the pericementum left, you will gradually get a re-growth of it, and in that way bring about a normal condition.

DR. MOLYNEAUX: Dr. Smith made mention of the fact that the peridental membrane was a medium of reproduction of bone in case of regulating. I would like to know if he is satisfied that that is the medium of reproduction of bone. In case of bring pressure against the alveolar process in excluding nutrition, that is, where bone is absorbed, is it through the medium of the peridental membrane, or is it due to the osteoblasts that reside in

the cellular tissue, and in the canals, as they usually do? Whether the interdental membrane is the medium by which the bone surrounding the root of the tooth on the side opposite which pressure is brought; whether the peridental membrane is productive of or the cause which produces bone there, I have some doubts; because in a number of cases, especially one which I presented to the society a year ago, where the diseased surfaces of the root and its labial surface were removed, at least the tooth had been extracted and the root filled, was simply replaced there in a clot of blood, and there was a reproduction of bone. The peridental membrane and everything was removed; the tissue was cut away, nothing left but the periosteum and mucous membrane covering the alveolar tissue. To-day the gingival margin is as perfect as in any tooth that had never been affected; yet it stood there simply surrounded by a clot of blood. That peridental membrane was not in that case productive of bone tissue; yet the tooth is as healthy as any tooth in the mouth, and there has been complete reproduction of the alveolar tissue and the interdental and approximal alveolar process. It is a question with me whether the peridental membrane has so much to do with the future reproduction of bone as it has originally in the production of the tooth together with the pulp. We can bring pressure upon the alveolar process naturally, and produce its resorption.

Dr. C. M. WRIGHT: Whether you can call this "A study in bone" or not, I don't know. It seems to me it is rather an ingenious mechanical arrangement, and that we are not so absolutely certain about what has been reproduced there in the way of bone. I think the extraction of that molar tooth, and the drawing together of those teeth, and the bringing down of that central incisor into its place and the curing up, or assisting the cleaning of the sockets, curing the soft tissues about these roots, perhaps would tend in some cases far towards the reproduction of the alveolar process; but it is hard to tell exactly what has taken place. We see sometimes teeth moving in old people; after a tooth has been extracted, a tooth will turn clear over and lie upon its side, one root being entirely exposed; yet there is still an attachment there. These teeth are still held in position in the case we are considering, as I understand it, by fine wire around them.

Dr. FLETCHER: The lower teeth are not. They have had

nothing on them for five months. The lower teeth are moved just as much as the upper. They were out of shape just as badly, and that is the reason I regret I didn't get the impression when I first undertook the case.

DR. WRIGHT: That old bone can reproduce itself in fractures we all recognize, dependent upon the activity of the nutrition and the vitality of the tissue. Billroth speaks of one case where new bone had formed as though you had broken a piece of lead pencil and bringing the ends together had surrounded them with a band of sealing wax. But would the same rules hold good that obtain as to the long bones, with regard to this spongy character of bone we find in the alveolus? Would you find lamellæ in the spongy bone of the alveolus?

DR. MOLYNEAUX: Not in the alveolar process.

DR. WRIGHT: Still, the alveolar process must develop from the periosteum. It seems we are not certain whether we have had new bone formed. In the case that Dr. Molyneaux refers to the gingival margin seems to be perfect, if you would get a magnifying glass, perhaps you would not find true bone.

DR. MOLYNEAUX: In regard to the alveolar process, it seems to me we try to link the condition of the long bones, and their situation, with an exposed condition like the alveolar process, but they are not parallel cases in any sense of the word.

I didn't understand in the beginning whether Dr. Fletcher considered pertinent to the question at issue, his expressions upon the action of muscular tissue upon substances and tuberosities of bone to which the muscles are attached. But I would ask in that connection, why is it, that during eruptive diseases many times a child under otherwise proper conditions, has teeth extracted and necrosis results? Even the extraction of a tooth preceding or during the time of an eruptive disease, such as chicken pox, measles, scarlet fever, and the like, will be productive of necrosis of the alveolar process.

It does not happen to other bones, as reported except under extreme conditions. The alveolar process is nourished almost entirely through the periosteum. It is not the Haversian canals and the nutrient arteries that ramify the long bones. The long bones have nutrient arteries, and they have periosteum in addition, so that in case one may be shut off the other is there. And they are not exposed like the alveolar process to external influ-

ences. I don't think there is much bone, or any bone, produced by the peridental membrane. The alveolar tissue is a peculiar tissue. It has not the stability that the other tissues of the body have.

DR. H. A. SMITH: In considering the movement of the teeth, we have to deal with conditions entirely physiological. We know that slight pressure brings on slight functioning in the peridental membrane, and the bone is digested. Where we have that basis we have the death of the bone, and that is carried off by the recuperative processes. There are some phenomena presented in the movement of teeth which nobody can explain. I remember the case of a diseased tooth, an incisor, under treatment for alveolar pyorrhea; and the question arose whether to move that tooth. According to the books it could not be done; but I made the attempt, as Dr. Fletcher has in this case done and we moved the tooth in position and cured the pyorrhea while we were doing it. I saw the case five or six years afterwards, and Dr. Waite saw it. We found the tooth had risen into position. Although a devitalized tooth, yet we cured the pyorrhea and moved the tooth simultaneously.

DR. WAY: One question regarding the movement of teeth. I would ask whether they respond to the action of your appliances, Dr. Fletcher, more readily than a tooth which you would consider in a normal condition?

DR. FLETCHER: They did.

DR. WAY: The reason I asked is, that a case came under my observation within the last two weeks of a patient of about twenty-two years of age, where the left superior central was slightly out of position, and pyorrhea was present. Our first effort was to cure the pyorrhea; and in the application of force we found the tooth rather refractory; the movement was not so easily affected as in a tooth in normal condition.

DR. WRIGHT: Is it correct to say that a person's adult teeth are irregular congenitally? Are they ever congenital? Does it seem proper to say that adult teeth, no matter how irregular, if one stands around a corner and another upside down, are defective congenitally?

DR. FLETCHER: The word "congenital," as used in this case is to distinguish it from that irregularity that comes from pathological conditions. I should say that the child whose teeth were

irregular in the same positions and same places and having the same characteristics with one of its parents, or grand-parents, had inherited the tendency to have teeth in that position, whatever the causes may have been. I should think that that would be congenital, if I understand the application of the term "congenital." I never have seen the term used before in that way, but so used it to distinguish the characteristics that the teeth evidently had before disease showed itself, the same characteristic showing in the daughter's and sister's teeth; so I took it that the conditions were always that way. Will you suggest a term?

DR. WRIGHT: I should think I would rather use the term an "inherited tendency" towards that condition.

DR. FLETCHER: In regard to this word "resorption," or "absorption;" the phrase "progressive absorption," I should think would cover the difficulty. It is a term which has been used, and although probably obsolete, makes the matter perfectly plain. As to this subject having been gone over, Dr. Heise mentioning that Dr. Younger has done something at it, would say that if I could have had some literature on the subject I should gladly have availed myself of such assistance. I knew nothing about the matter, had read nothing; so that what mistakes have been committed are simply at the expense of the patient and to my own benefit. As to growth of bone, according to recent researches, there are two methods of forming bone, intermembranous and intercartilaginous. I can't agree with Dr. Molyneaux that the alveolar process is different from any other bone in the body, when it comes to its histology or its growth. If you will come to my office, I can show you a photomicrograph of a section of a sequestrum of the alveolar plate. It was taken from the superior maxillary about and above the left lateral, showing distinctly Haversian canals.

My own explanation of this absorption and rebuilding of bone is, that it is a perfectly normal condition, and can be found present in any part of the body. The reason I mentioned this matter of tubercles and other eminences on the bones, where the muscles have been attached, is to illustrate that bone in any part of the body under the same conditions will do the same thing. The alveolar process is no exception; you put pressure on the tooth to move it in one direction, and absorption is made where the pressure is greatest, and the growth as I would take it, of an

inter-membranous character, has filled in behind it. I don't know how nature would do it in any other way; if that is the way she does it in other parts of the body, it seems natural she would do the same here; she has the bone and the vessels, and she can collect the material from the blood; there is no difference whether the bone is as thin as a bone can possibly be; it still has the same organs to produce it; and it will be produced in the same way. And I should also say that there is a growth of bone in sockets of this case to fill up the spaces, the same as there would be in a younger person. I believe that is the way it is done in all cases, that if the bone is filled in, to take up the spaces that has been made by the pressure, that it is done after the inter-membranous method of forming bone, just as the plates of the skull and the other flat bones of the body are formed. It does not matter whether it be according to that or the inter-cartilaginous or not; it seems to me most likely to be the inter-membranous, because you have in that case, to take the peridental membrane, which histologically don't differ (possibly excepting a little more connecting tissue in them) from the periosteum in other parts of the body.

DR. H. A. SMITH: I thought the peridental membrane was destroyed by pyorrhea.

DR. FLETCHER: If destroyed by the pyorrhea the teeth would drop out without any difficulty whatever; as long as a tooth has an attachment, there must be some peridental membrane, unless it is an implanted tooth; and in that case it is simply held there by pressure of the bony tissue; then it must necessarily be reabsorbed, as Dr. Heise said.

As to the grinding of the teeth referred to by Dr. Heise, I would say that the articulation has been greatly improved. Those of you who took the pains to examine closely the models exhibited, will have recognized that after treatment the articulation was greatly improved; and this without any grinding, aside from the little done on the edges of the front teeth. One thing I especially enjoined upon the patient in this case is, that if she retains these teeth she will be obliged to have them attended to by some dentist, every three or four months; she has an excessive deposit of tartar; even between the sittings which I have given her, two or three weeks apart, during the latter part of the work she would come with teeth entirely covered in the back,

and in places where she could not reach them with a brush, with thick deposits of tartar. I told her she would be obliged to have that kept off by some one, otherwise, she will suffer in a few months a return of the former condition which existed as to the gums; in which event the teeth would begin to get out of shape again.

Proceedings of the Cincinnati Academy of Dentistry.

De Trey's Crystal Mat Gold.

BY J. C. VAN KIRK, D.D.S., CINCINNATI.

THE filling of teeth with gold has been revolutionized during the latter half of this century. This great change has been brought about by the advent of cohesive gold, in which we have an admirable filling, but with it came those long hours of tedious toil that the modern dentist is longing to see pass away.

The idea of filling teeth with crystal gold is by no means a new one, but an old one revived. Some forty years ago Dr. Watts brought out a crystal gold, which came into use for a time, but was discarded for the reason that it was somewhat contaminated by the incomplete removal of the nitric acid used in preparing it, and also from the careless manner in which it was manipulated thereby causing many failures by its use.

In bringing up this matter of crystal gold we are met on every hand by objections to it, and especially from those who have used it in its old form. But in this new gold Dr. De Trey claims great superiority over any other make, either foil or crystal, and those who have seen it demonstrated must confess that the most perfect and beautiful fillings can be made with it. In this gold we have a very cohesive article, differing from cohesive foil in form. One being a mass beaten out into a very thin sheet of foil, while the other is a mass separated into minute crystals. So anyone can easily see that the crystals may be cohesive just as well as the foil.

These crystals having a highly cohesive property can be readily converted into a solid mass. All the good properties of the foil are contained in this gold, with the addition of a few others, which brings it in favor with many dentists to-day.

Three points I wish to refer to are easy and rapid manipulation and perfect adaptation, and with this we have the greatest degree of density and edge strength, which are indispensable in a good gold filling, and which have heretofore been a defect in all crystal gold.

A few words in regard to the preparation of the cavity will suffice. All pits and small grooves are unnecessary and should not be used, but the cavity may be prepared more like a cavity for amalgam, with sufficient undercuts to retain the filling. A little experience will soon teach anyone all that is necessary to prepare a cavity suitable to hold the filling.

The ease with which the gold is worked brings it into favor with the operator and especially the patient, who greatly appreciates the absence of the mallet. A large piece of gold is placed in the bottom of the cavity and condensed with hand pressure, then another piece is added and so on until the filling is completed. It will be seen that the gold builds very rapidly as larger pieces can be easily condensed with hand pressure, and a solid mass can be made of the gold. Failures may occur by trying to use it with the ordinary plugger point, as it is not adapted to the use of this form of gold. De Trey's instruments of special pattern are admirably adapted to its use.

They are made with large rounded surfaces, with very fine serrations. They are of many shapes and sizes to meet all requirements. The gold is packed with a firm pressure and a sort of rolling motion, care being taken to thoroughly condense each piece until the bright gold color is brought out, the gold is then thoroughly condensed. If the gold becomes a little burnished it does not matter, as with using foil. One of the features of the gold is that it spreads laterally under the instrument, and in that way makes it easier to fill the cavity perfectly, and makes the adaptation to the cavity perfect. This feature makes it easier to fill under cuts, as the gold can be forced into them before it is condensed, while cohesive foil becomes condensed so easily that great care must be taken to get it into the undercuts perfectly. Yet it requires careful manipulation to get good results, but it has that softness which foil does not possess that makes it easy to carry into the proper place before it is condensed.

The gold is best annealed by placing it on a piece of mica and holding it over the flame. Care must be taken not to over

anneal, as it destroys its softness, as is the case with foil, but this is best learned by a little experience. You get a more uniform annealing than when brought in contact with the flame.

I believe, as I learn to use it better, I will give it a more prominent place among my filling materials.

DISCUSSION.

DR. REES: I saw Dr. De Trey's demonstration, and I think there is really more in this gold than the essayist claims. I saw him do some things that I had not thought possible of accomplishment. He had one whole bicuspid built up, and just by scraping the surface a little he laid his gold right on and it could not be scraped off. He put a floor in a cavity in a molar tooth, inserted two layers of his heaviest gold, when several tried to get it out and failed to raise it. At the same time Dr. Leslie presented his mat gold and he had De Trey put in a filling with his gold (Leslie's), which he picked out. I doubted whether it was good for contour work, but the doctor manipulated it so that he could get any kind of a filling desired.

DR. GENSLEY: I saw an entire molar built up with it. If it works better than foil, and saves us time, if nothing else, it will certainly be worth our while to give it a trial.

DR. PFAFFLIN: I saw a pretty demonstration made of De Trey's gold. It was a large amalgam filling in a first molar, about one-half of which the demonstrator cut out and virtually built up the whole tooth with De Trey's gold, and it made a beautiful filling. The demonstrator used an ordinary plugger to finish off the filling, and an automatic mallet for condensing it thoroughly. He laid particular stress upon the fact that the gold must be thoroughly condensed at the completion of the filling. Also, the gold must be thoroughly annealed. Anneal it until the gold starts to curve, and at that time it is of a dark brown—not a red color. It is superior to the other gold in density and edge strength.

DR. KUMLER: I have no opinion about this gold, because I have never used it, but I do have an opinion about Watts' crystal gold, having used it for four or five years, and the objections that are brought up by the essayist I do not believe will hold water if the crystal gold is used carefully. One advantage of this gold that every manufacturer claims is that it is easily and rapidly

worked, and that very so-called advantage is often the failure of the whole business. Because a thing works easy has been the ruination of our alloys, and the claim made by many that an amalgam filling is easy of insertion, I think is a weak part of their theory. Possibly in De Trey's hands this gold works like putty, but I do not know whether this gold is going to be any better than the other in the long run or not. Watts' gold has now been used for about forty years, which is a pretty good test for any gold. Possibly at the first there was a trace of nitric acid, but I think Dr. Watts' gold is probably as much used as any other now. You can accomplish the same thing with it, I think, as with Dr. De Trey's gold. Where foil won't stick, Watts' gold will; it will also spread laterally if used laterally. These things are faddish, but possibly De Trey's gold is an excellent material. I believe we ought to try it—that is, try it cautiously.

DR. REES: Dr. De Trey advised that hand pressure be used entirely, but stated that some men did not have enough strength in their fingers, and he then advised the use of the mallet, with a light stroke. In this way you could get the same effect.

DR. GILLAM: What would be the result if condensed too much?

DR. REES: You would only have a better filling.

DR. STEWART: Is it not almost necessary to use De Trey's pluggers?

DR. VAN KIRK: Not absolutely necessary. I have used others, but get much better results from the use of his instruments.

DR. REES: Dr. De Trey says you cannot over condense it, and the only disadvantage is that you may make the tooth sore.

DR. MCLEAN: I have seen this gold used by the young Dr. De Trey six or eight times, under different conditions, and in various classes and kinds of cavities. The objection I have to it is the fact that you must have a boxing match with your patient in order to insert it in the tooth. The other objectionable feature is the cost of the gold. When you come to figure that it costs you forty dollars per ounce, that is \$13 more per ounce than either hard or soft foil. The facility with which the average dentist can use it, or the rapidity with which he uses it, is not any greater than that with which I can use annealed foil. The hardness of the surface of the gold when finished seems to be sufficient, but I am inclined to believe that with cohesive foil carefully

annealed—using No. 4 or heavier gold—you can accomplish the same results and secure as perfect and lasting fillings, and in this way we can save much money each year. Fads in dentistry are numerous, and we have in the dental profession the least percentage of thorough business men of any profession on the face of God's earth; if they have not the money they will go in debt for purchasing new outfit. The dental depots have their shelves filled with appliances and materials, the profits from the sales of which would not pay their gas bills. The manufacturers have sold these appliances to the supply-houses simply because dentists will buy some of them. I think dentists require a great deal of business training. As scientific men we should be in a position whereby we can recognize the utility of the material we use, and we should be careful about giving up the well tried and useful articles for things that are new.

DR. VAN KIRK: I have nothing more to say than that Dr. McLean not having tried the gold at all, I think he would change his mind somewhat if he would try it. I do not claim you can use it very rapidly. De Trey claims that not more than one third of the time is saved, but that is considerable. The cohesive properties are perfect, and if the crystals are firmly pressed together there is no reason why it should separate any more than cohesive gold.

SPECIAL CASES PRESENTED.

DR. STEWART presented a superior right first bicuspid, which he had treated, having removed two nerves, after which he had an abscessed condition of the tooth and attempted to open it up better, but patient had already suffered so much that the doctor extracted the tooth, finding three well-developed roots.

DR. PFAFFLIN: I had an interesting case the other day. I extracted a first bicuspid root to which was attached a banded Logan. The tooth had been in this condition for five years, having finally become loose, and the patient consenting to have a bridge put in I extracted this root. In removing the gold band from the root I found the dentist in endeavoring to fill the two roots had drilled clear through the tooth at the junction of the two roots. A portion of the filling material, three times as large as a pin head, was found down there, it being gutta-percha, with some little cement. I, of course, cut it out. It had been in that

condition for several years, and the patient had never had any trouble with it at all. After the filling material was cut away I could go right up with a Donaldson broach. I inquired particularly as to whether she had ever had any inflammatory condition, and she said she had not.

DR. MCLEAN: In speaking of these anomalies, I want to say that the dentists of the present day are a little backward in recognizing the systemic condition of the patient. I have in my office a half dozen specimens of anomalies that have been worn in the mouths of patients for many years, but 'as soon as the systemic condition of the patient became below the normal I was called upon to remove those teeth, and I wondered how they could have had the fillings inserted and worn them there so long without trouble. It is wonderful in the extreme as to how long a patient can stand these conditions. If the dentist would study the subject of prognosticating these conditions carefully, the longevity of such teeth would be materially increased. We do our work irrespective of the systemic conditions of our patients. We should recognize these conditions in such a manner as to prognosticate and diagnose the case so that we could determine the treatment we should employ.

I think anomalies such as have been presented this evening, are past our ability to prognosticate or diagnose. In these cases the dentist is not at fault; he cannot tell if there be three roots to a bicuspid. We should, as I say, study the systemic condition of the patient, the condition of the mouth as we find it, whether there be missing teeth, mal-occlusion, non-occlusion, etc. Many failures are the result of the lack of our application to the work in this way.

DR. VANKIRK: The other day a patient complained of trouble with the jaw locking. She had been directed by her physician to ask me whether the regulation of her teeth, which I had accomplished for her a year ago had not had some effect in causing this condition; also if the reflex nervous action had not probably caused it. I said possibly so, but I hardly thought so. A little later she complained of trouble with the eruption of a third molar. Her jaw was very sore. I could scarcely see the molar; it was so much swollen she could scarcely close her teeth. I lanced it and evacuated some pus. She stopped next morning and said everything was all right. I attributed the locking of the jaw to the eruption of that tooth.

DR. McLEAN: Impacted wisdom teeth produce sufficient pressure to induce suppuration. The size of the teeth have much to do with such conditions. Because of the intermingling of various nationalities, etc., we have large teeth in small mouths, and these impacted teeth produce pathological conditions at times. What the Doctor did with reference to lancing and evacuating pus indicates to me that the impacted tooth produced so much inflammation as to cause suppuration, and its proximity to the inferior maxillary bone has evidently produced this serious condition. If the Doctor had taken out a V-shaped space posterior to the wisdom tooth he would have produced a recession of the gum, allowing the third molar to come up in place so that the occlusion would not have been interfered with and the patient would have been all right.

Ten days ago a physician sent me a young lady who had been suffering with the toothache for two weeks. She had two bicuspid teeth in position on the lower jaw and said the doctor sent her to me to have those teeth extracted to permit the permanent teeth to come in. I am naturally serious sometimes, so I told her to go back to the physician, and take the first street car to get there, and tell him to call at my office so that I could explain the condition I found in her mouth. That I would try to teach him to recognize permanent teeth from the temporary ones; that I would give him a little table so that he could determine as to the eruption of the teeth, etc.

DR. PFAFFLIN: In speaking of the case about the jaws becoming closed. You will find I think, in a great many women—especially nervous women, that there is a tendency for the jaws to lock. The reflex action set up from the continual opening of the mouth during the insertion of a large gold filling, may have considerable inflammation in the angle of the jaw. Frequently a patient will ask the dentist to allow him to rest a moment and permit him to bring his jaws together, showing there is more or less pain. It may be so painful at times that it becomes absolutely impossible for the patient to stand it.

You will often find this condition present with unerupted third molars. After the trouble with the third molar is over, the condition disappears.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

Crystallin is the name given to a certain form of collodion. It is prepared by dissolving one part of gun-cotton in four parts of methyl alcohol (wood-alcohol) and fifteen parts of amyl-acetate (pear oil). If five parts of castor oil and ten parts of Canada balsam are added to each twenty parts of the varnish, the resulting liquid is known as elastic crystallin. This preparation is very useful for lining cavities previous to the insertion of fillings.

Geraniumformol is a new preparation highly recommended in France by Marion & André for relieving toothache. The pain will almost immediately subside after its application. The remedy is prepared by adding 20 parts of geranium oil to 100 parts of one alcoholic solution of formaldehyde gas (40%).

Death Resulting from Treatment of Dental Hemorrhage.—A girl, 14 years old, had a tooth extracted. The hemorrhage had been stopped with cotton soaked in some liquid. Very soon the girl complained about severe headache and vomiting set in. A few hours later the girl died with symptoms of poisoning. The state authorities attached the body.—*Zahnt. Reform.*

Dr. W. Vagna has devised a new form of nerve extractors. Using Corydon Palmer's single hook instrument as a prototype, he twists the nerve needle with a special constructed pair of pliers in a loop. He claims that this loop represents the weakest point of resistance of the whole instrument, and if the needle should break, it will always occur on this point, which, of course, is outside of the root-canal. The broken part can be easily removed with pliers.

Iodoform as an Antiseptic Dressing.—In all cases where a continuous action of an antiseptic is needed—either as powder or as a plug—we have still retained iodoform. Repeated trials with other antiseptics, more so with itrol and airol, (as powder and gauze), convinced us again and again that in spite of all promises made by the chemical manufacturers no equal substitute has been

found till to-day. Especially in cases of strong putrefaction the superiority of iodoform was demonstrated by evidence. In all cases where iodoform could not be borne, as in a bad case of necrosis of the jaw, in which the dressing was made of silver gauze and itrol, the extraordinary strong putrefaction lasted for months, while in similar cases the tampons, removed two or three times, gave a pure odor of iodoform. Prof. Patrick's method of plugging an alveolus for arresting dental hemorrhage, is very simple and absolutely certain, and still there are many remedies and complicated apparatus advised. The alveolus should be forcibly washed out by a jet from the water syringe to remove all the blood clot and immediately plugged with iodoform gauze. The main point is, the gauze should come in direct contact with the bleeding vessels. The plug must be pressed in as tight as possible, the superfluous gauze is cut away with a pair of Cooper's shears and the alveolus pressed latterly with the fingers.—*From Report of Dental College of the University of Breslau.*

Dentist George Seitz has made a special study of ethyl chloride as a general anesthetic. A special constructed mark has been used by the author, which resembles somewhat Esmarch's chloroform mark. It consists of a double wire frame, with a rubber cloth stretched over the inside to prevent the chloride of ethyl from coming in direct contact with the patient's face. From reports it is shown that so far 750 general narcoses have been made in Europe with ethyl chloride, which have been a complete success.

D. M. f. Z.

A New Remedy to be used as a hæmostatic has been advertised by Paul Carnot of Paris. It is the well known material gelatine. About five to ten parts are dissolved in 100 parts of a sodium chloride solution. To use the remedy it has to be liquified in hot water and a cotton or gauze plug is saturated with it and inserted in the alveolus. This solution should not be overheated as it loses some of its hæmostatic power.

Prakt. Wegweiser.

I cannot but mention a remedy which I recommended fifteen years ago in the *Deutsches Monatschrift für Zahnheilkunde* as a very useful disinfectant in the treatment of all sorts of diseases of the pulp. It is chlorophenol, manufactured by Grass & Worff in Berlin, (seems to be identical with chloro-phenique made by

the Phenique Chemical Co., St. Louis, Mo.) I have used this remedy almost exclusively and have always returned to it after having tried various other mediums. Next to its wonderful property of almost immediately relieving toothache which has its origin in the pulps, its foremost importance is the great antiseptic power and the quick penetration of the tissues. This great antiseptic power is easily explained. Concentrated carbolic acid saturated with chlorin must naturally possess a high grade of disinfectant power. In regard to its power of penetration it is surely superior to the ethereal oils, but more so to sublimate. Miller has pointed to this part already in 1894, in his essay. The various methods of treatment of diseased teeth and of the removal of the pulps. And if he has made a superior claim at this time to sublimate, copper sulfates, and the ethereal oils, on account of their greater duration of action, clinical experiments have demonstrated their unfitness as they discolor the teeth; as it is well known, carbolic acid is a strong caustic, but I can testify from long experience that chlorophenol is almost devoid of this property, even in the concentrated stage. The tissues of the pulp seem to possess a high grade of resistance toward this caustic. I have had several cases under treatment in which I placed chlorophenol upon the pulps every third day for some weeks and still the pulps retained their vitality under this conservative treatment without reaction. Experiments in this direction outside of the mouth were made by Miller some years ago. I have repeated those experiments on calves teeth and the chlorophenol had penetrated the pulps so thoroughly that a constant preservation was surely guaranteed. It seems as if the chlorophenol saturates the tissues only to a certain degree, without cauterizing the whole of it. This probably helps to explain the extraordinary action of preservation upon the living pulps.

The dentine is more easily penetrated by chlorophenol than by simple carbolic acid, probably on account of the percentage of chlorin. Experiments which I made lately on the basis as laid down by Lawley York for carbolic acid showed that chlorophenol penetrated the dentine in twelve hours, which is only two thirds of the time required for carbolic acid. There are no bad properties known, such as discoloration, etc. Therefore I can again most urgently recommend chlorophenol as an extraordinary medium for treatment of disased pulps.

Dr. Walkhoff, Journal für Zahnheilkunde.

In cases where the form of the root canal gives cause to doubt whether it has been possible to cleanse the canal all the way up to the apex, and in roots which, by a more prolonged effort, seem to be very strongly saturated with putrid liquids, in case of gangrenous humors of long standing, it can be regarded as suitable, before putting in the final root-filling of carbonized cotton, to insert temporarily either a paste of iodoform with eugenol or formalin, which is allowed to remain twenty-four hours. A fine root-plugger is dipped in a paste of deodorized iodoform of about the consistency of syrup and a rather strong formalin solution in such a manner that a portion of the paste sticks thereto. The root-plugger and the adhering parts should, together, be of about the same diameter, as the root-canal first before the root-plugger has quite reached the apex, the paste is rubbed off against the walls of the canal by giving a rotating motion to the end of the plugger, which is then drawn out in such a way that an open passage is left in the root. Stress should be laid upon the fact that this mass is not pumped up, it then can neither be estimated how great a quantity has been introduced nor where it has been placed. After this treatment, the patient should be instructed to come back as soon as the least unpleasantness is experienced. If no unpleasant symptoms have appeared, a permanent root-filling is introduced into the apex.

Dr. Samsoie, Plateless Dentures.

BRIEFS.

Small Napkins.—Dr. F. L. Platt advocates the use of small napkins, 2½ inches wide by 16 inches long.—*Pac. Med. Dental Gazette.*

Mouthwash After Removing Calculus.—Use a hot boracic solution, about 1 to 600, for a mouthwash after removing calculus.—*Review.*

Pearline in the Laboratory.—One of the indispensables in my laboratory is Pearline. It removes flask grease and other dirt like magic. I also recommend it to those of my patrons who wear plates to cleanse them with; it effectually removes the oily concretions and renders them sanitary.—*Texas Jour.*

How to Lessen the Evil Effects of Cocain Injection.—The evil effects of the cocain in the injection may be lessened by the addition of sodium chlorid and morphin, using up to one-eighth of a grain of the latter at each operation.—*J. B. Dicus, Review.*

Creosote Carbonate.—Creosote carbonate can be substituted for all uses where creosote has previously been employed, the carbonate having the same beneficial effect, and being at the same time inodorous, which property will at once present itself as a great advantage to the dental practitioner.—*Items.*

Deodorized Tincture of Opium for Peridontitis.—During the existence of acute peridontitis, or in the process of abscess formation where it is difficult to give relief by surgical means other than extraction of the tooth, eight to 10 minim doses of deodorized tincture of opium will give prompt relief, and is free from many of the objections of morphia.—*Texas Dental Journal.*

Cheap Method of Restoring Molar where only One Wall Remains.—Make a silver band of as thin plate as it can conveniently be made, and the size you desire the tooth when finished. After removing all decay and burying anchorages in the roots, place the band in the desired position and fill and build up with amalgam, after which have the patient close with natural bite to form cusps. If carefully finished after the amalgam becomes hard the silver band is not noticeable, and you will have a very substantial and satisfactory restoration.—*A. H. Mories, Med. Dent. Gazette.*

Effects of Improper Living.—Vitiated air, excessive indulgences in food and drink or any of the duties or pleasures of life, exhaustion from excessive overwork, and refraining from needed exercise are productive of interference with the metabolism of the tissue, and when continued for generations produce hereditary taints or dyscrasia. The results as manifested in disease of different organs are manifold, and the teeth, as a logical consequence, must share in this train of evils, as they cannot elaborate from the blood-supply that which gives resistance to the invasion of pathogenic bacteria.—*S. B. Luckie in Cosmos.*

Adenoids.—Dr. Goodhart thinks this is due rather to hypertrophy of the mucous membrane than to the presence of definite polypoid growths. He emphasizes the necessity of definite symptoms being present before operation is undertaken, and enumerates five conditions as necessitating the procedure: Earache, deafness, enlargement of the glands, pigeon-chest, and asthma; in the latter complaint adenoids should be looked for, and, if found, removed. Some definite guidance of this

kind is very necessary at this time, when there is a tendency to ascribe any and every deviation from the normal child as due to adenoids.

Elements Favoring Dental Caries.—Arrangement and form of the teeth are to be considered in their relation to the retention of fermentable substances in situations favoring circumscribed or diffused caries, both primary and secondary. Structure is to be considered first, as inert enamel decalcified easily or with difficulty, or not at all by equally potent causes; second, as resistant or non-resistant dentin. The vital resistance upon the part of the dentin is practically nil, as it is almost invariably overcome. The enamel once decalcified, the destruction of the tooth is usually but a question of time.—*O. E. Inglis, Cosmos.*

Peroxid of Hydrogen Not an Irritant.—Hydrogen dioxid is not an irritant to living tissue, but where inflammatory reaction and irritations of tissue follow its application, the result is to be attributed to impurities in the preparation of hydrogen dioxid used, and which result from the method of its manufacture. Hydrogen dioxid is made from barium dioxid by the action of certain acids, notably sulfuric, hydrochloric, and phosphoric, and in some specimens the acids employed in their manufacture are not thoroughly eliminated, so that these acids or their combinations remain in the preparation, and give it whatever irritating properties it may possess.—*G. V. I. Brown, Cosmos.*

Care in Selecting Artificial Teeth of Correct Shape and Color.—We should be exceedingly careful about the shade of teeth used, especially when making a *partial* denture, because the color of the teeth match the complexion, and if a different shade is used an inharmonious effect is produced, giving a shock to the sensitive optic of the critical dentist similar to that felt by the finished musician listening to the harsh discords of the amateur. I do not deny that there are exceptions to this rule and that there are cases where we can change the position of a tooth here and another there, so improving the appearance of the originals. But in the majority of cases, the closer we adhere to, and the better we understand nature, the better the result obtained.—*G. O. Kerfoot, Dental Review.*

Three Practical Suggestions.—There are three main points made by Dr. Hart in his clinics and exhibits which many of you have had the pleasure of attending. The first point was the making of root-canal filling material, four parts Canada balsam and one part salol, heating the balsam first.

The second point was the adding of pyroform to cement fillings, pyroform being practically formaldehyde in a solid form.

The third point was the application of the rubber-dam and the

treatment of the tooth surfaces with formalin. The application of the dam was preceded by the use of three-per-cent. pyrozone about the teeth and gums to prevent the crowding of bacteria into the soft tissue which would produce irritation.—*Pac. Med. Gazette*.

The Degree of Heat not Unpleasant to the Healthy Teeth may be designated as the normal rate of the individual. This varies with different persons to a considerable degree; while some will endure without irritation a stream of water at 135° applied to an isolated healthy tooth, others are unpleasantly affected by a temperature of 120°.

The effects of cold temperatures excite impatience when applied to healthy teeth to a greater degree relatively to the mucous membrane than they are affected by heat; that is, they much better tolerate 130° than they bear 40°. In this connection it is significant that the earliest manifestation of irritation of the dental pulp is intolerance of cold temperatures, and that it is an invariable indication of excitation of the nerves of the pulp as the consequence of commencing hyperemia.—*Louis Jack, Cosmos*.

Cleansing (?) Spaces in Bridge-work.—Now, my objection to general bridge-work is the filth (so-called cleansing) space. There is not, nor possibly could be, anything natural about the feeling of such work in the mouth, and if there is any one object in prosthetic work that we should strive for more than any other it is to get something that *feels* and looks natural. My first, as well as my last, bridge was made with solid teeth let slightly into the gums instead of facings with filth (cleansing) space. I have removed numbers of old bridges with filth-spaces and replaced same with solid bridge, and I would like for you to find one patient who would be willing to go back to the filth-space bridge. Why there has been so little attention paid to the matter I can't imagine, unless the very few who use the solid bridge have been like myself—never have written it up.—*G. S. Staples, Texas Dental Journal*.

Color Blindness and Dentistry.—Dr. W. J. Prather thinks that when it comes to operating on the teeth in the mouth, the ability to distinguish the slightest difference in color should be more acute. Without that ability, it matters not how learned the dentist may be, how much experience he may have had, or what ability he may have in the use of instruments, he *can never* be a good dentist.

A slight change of color may indicate a dead pulp in a sound tooth; a very slight change of color may show the loss of some constituent of otherwise healthy dentine or enamel; the ability to determine by the color just where the perfect and imperfect tooth substance meets is all-important, if the operation is to be perfect.

No young man or woman should ever even commence the study of dentistry until they have had their eyes examined very thoroughly as to color sense.

Be Sure of Solid Walls to a Cavity.—The fact that a certain wall has stood without fracture up to the time of the operation is often accepted as an indication that it may safely be left around a filling. The argument is used that if it has not broken when surrounding a cavity it certainly will not break when reinforced by a filling, but an important factor in the case is overlooked. When a tooth begins to decay it is often more or less sensitive under mastication, and the patient involuntarily forms the habit of favoring the tooth so that it does not receive its full share of masticating usage. The decay progresses till the enamel is so undermined as to leave very weak walls, which may stand indefinitely under these conditions, so far as the stress of mastication is concerned. But when the cavity is filled and the tooth rendered comfortable, the patient gradually begins to use it again, and the consequence is often fractured walls when the operation had judged them to be safe. The highest class of service to our patients demands the closest insight into all of the factors making for or against the success of our operations.—*C. N. Johnson in Cosmos.*

A Blot Upon the Dental Profession.—I met at a dinner party an American dentist, who practiced in London and elsewhere, who had told me when I was in Europe in 1889 that he had doubled his practice in dollars in the past two years. He volunteered to tell me the secret of such a marked success. He said, "Since I became familiar with gold crowns, I no longer take the trouble to fill teeth with gold or amalgam, if at all difficult, such as I once did with your electric mallet, and resulted in such a satisfaction to me. I now cut off all such cases posterior to the cuspids. This pleases the class of patients coming to me, and I get double pay for it."

Such a practice is an explanation of why so many all-gold crowns and gold bridges are placed on teeth, not only in Europe but in America, and is a blot upon the dental profession, and is, in fact, doing away with the highest art in dentistry,—the filling with gold, amalgam, and other materials. The dollar rules the hour with dentists as well as the rest of the world, but this craze for crowns and bridges has swept over the dental world, and the man who will not place on gold caps and insert bridges by mutilating human living teeth must go by the board, for he is considered not up to a high professional standard. Besides, it has so far superseded the practice of sectional plates, held by clasps, that there has been a falling away from this commendable practice. Any ignoramus can

stick on by cement a poorly fitting gold cap to a mutilated tooth, sharpened to let it go on loosely. In all such work I observed, both here and at home, that the laws of articulation are comparatively lost sight of.—*W. G. A. Bonwill, International.*

Oil of Cinnamon as a Root Dressing.—In the first place, the oil of cinnamon is what my druggist calls the “true oil of cinnamon.” It is extracted from the bark and must not be confounded with the oil of cassia, which is obtained from the cassia bud. There is no comparison between the two oils. The veriest tyro could tell that one was a hundred times more powerful than the other.

In my ordinary practice, where I can apply the rubber dam I prepare the root with sulfuric acid and soda (sodium and potassium would probably do as well), dry thoroughly with hot air, place a small wisp of cotton saturated with the oil in the extremity of the canal, stop the canal with gutta-percha and fill. If there is an active abscess at the apex of the root, I give the patient instructions how to make and apply a fig poultice to the gum. Of course, if the face is badly swollen, and the tooth in the condition popularly called “ulcerated, I treat and reduce that before filling.

But my most remarkable experience has been in those cases where it was impossible to use the dam. These I simply excavate and disinfect as best I can, which in many cases is almost not at all; then almost fill the pulp-canal with cotton saturated with the oil, put an amalgam filling right on top of it, and let them go. Now this sounds preposterous I know, and the first time that I tried it I had no idea of success. I am not going to tell you of the per cent. of success, for that would sound still more preposterous. Just try it yourself, and you will say that oil of cinnamon is a most remarkable antiseptic.—*Dental Cosmos.*

SOCIETIES.

New Dental Law for Vermont.

VERMONT Statute, chapter 191, and as amended in Act 114 of the legislature of 1898.

SEC. 1. A board of dental examiners is hereby created, which shall consist of five dental graduates or practitioners, to be appointed by the Governor in the month of November biennially, and to hold office two years from the first day of the following

December, and until their successors are appointed. Vacancies shall be filled by the Governor.

SEC. 2. The meetings of the board shall be held annually, or oftener on the call of three members, who shall give thirty day's notice thereof in at least three dental journals circulating in the State.

SEC. 3. The board shall at its meetings, examine applicants and grant a license to such persons as they find qualified, on the payment of ten dollars.

SEC. 4. Members of the board shall receive three dollars a day and necessary expenses for time spent in examining applicants and granting licenses, if the fees received from applicants during the biennial term in which such service is rendered are sufficient to pay the same; and at the end of each biennial term the board shall file with the State Auditor a report of its receipts and disbursements verified by oath, and shall pay to the State Treasurer any excess remaining in its hands.

SEC. 5. If a person without a license practices dentistry for a compensation or reward, he shall be fined not more than one hundred dollars and not less than twenty-five dollars. But this section shall not apply to extracting teeth by a physician or surgeon licensed under provisions of Chapter 190 of the Vermont Statutes.

SEC. 6. The board shall keep a book in which it shall enter the name of each person licensed.

SEC. 7. A person who receives a license from the board shall within thirty days from the date thereof, cause it to be recorded in the office of the Secretary of State, who shall be entitled to twenty-five cents for recording the same.

SEC. 8. If a person does not cause his license to be recorded within the time required by the preceding section, he shall forfeit the same, and shall not be relicensed until he has paid the board ten dollars.

SEC. 9. This act shall take effect from its passage.

Approved Nov. 8th, 1898.

BOARD OF EXAMINERS OF VERMONT STATE

Appointed by the Governor, is as follows:

Thos. Mound, President, Rutland; Geo. F. Cheney, Sec'y. St. Johnsbury; S. D. Hodge, Burlington; R. M. Chase, Bethel; K. L. Cleaves, Montpelier.

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CONTRIBUTIONS.

"Practically" Almost as Good as Gold.

BY C. W. BARD, D.D.S., SLIPPERY ROCK, PA.

THIS, perhaps, is a strong statement to make relative to aluminum, for superior dentures, nevertheless, in my experience, it is true.

Ten years ago I made two superior dentures on aluminum base, and in speaking of the work to older practitioners, they discouraged me in the use of it, stating, in their experience, it would in a short time become perforated at the line of rubber. I quit using it for fear I might have considerable work to replace on different base, but concluded to examine the plates and mouths of the patients, spoken of, frequently, and compare (as to service and condition of mouths) with those wearing the vegetable base, and after eight years of close observation I concluded it was superior to rubber in every respect and inferior only to gold and platinum. Therefore for the past two years two-thirds of the plates I have made were aluminum. My patients, without exception, are pleased with it, and those who had formerly worn rubber *praise it*. On account of its conductivity I find the mouths in a healthy condition, and adaptation of plate as good or almost as good as when first placed in the mouth, even after

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eight years wear; have had no perforation of plates or any signs thereof. Can this be said of rubber? We know that with the rubber base we have a constant absorption of bony tissue, due to the retention of heat in the mucous membrane, causing very sore mouths in many cases. Another objection to the use of rubber is the breaking of plates. Why is this? The removal of bony tissue is slow, but sure, and after three or four years wear the plate is left without support and breakage is the result.

Dental Legislation.*

BY G. H. WILSON, D.D.S., CLEVELAND, O.

I BELIEVE this is a subject of great interest to all the dentists of the State and throughout our whole country. I believe Ohio should take an active part in this work at the present time. If you will think over the history of dental legislation, you will remember that Ohio was a leader in this branch of work. Alabama introduced the first dental law, but it was under the control of the medical profession; second, Ohio and New York States. New York a few days only before Ohio, so Ohio ranks with the very first in dental legislation. Ohio does not now rank with some of the other States of the Union, and we must say with some of the foreign countries, in dental legislation, while it should be in the foremost ranks in this matter.

Of course we can do nothing until our legislature meets again, but meanwhile we can be making preparation and I believe now that both those men who were interested in dental legislation, and those who were not, are all convinced that something must be done soon, and that we need it more than we ever have before. So we should have a committee representing all the various interests in the State, representing those out and in the societies, in the colleges and in practice, and they to prepare a bill which will be acceptable to all, and submit it to legal authority, so it will stand. Then, when the legislature convenes, I think it will be very little trouble to have a bill of that kind passed very readily, but if we continue to fight in factions, as we have before, we will have no success. It is true we are some-

* A talk given at the State Dental Society, December, 1898.

times over-enthusiastic, if we believe we are right we will go ahead and let the results take care of themselves; it is not always best to state our convictions very emphatically, for policy will win many times, where straight up and down yes and no does not win. I believe the influences are such to day that if it is properly handled we will get a bill which will be just.

"Why should we have a better law?" a prominent gentleman of another State said to me; "you are the dumping-ground for us." He said we ought to have legislation that would be similar to that of Pennsylvania and New York States. These two States wish to have us on an equal with themselves. We are not even on a par with the western States. Michigan, for instance, will not accept everybody we do. It should not be so, we must have legislation in this State better than we have. The law in Pennsylvania requires all examination papers to be placed on file and kept for five years. If it is a question whether the examining board has done a creditable or discreditable act or not, the papers are open for inspection; if they stand for five years without being questioned, the evidence is conclusive, and the papers may be destroyed. The examination is under control of the Superintendent of Public Instruction. It should be so in our own State.

Our present laws require just a common school education for admittance to examination or to a college; the result of this is when a man graduates and goes out into society he has not the standing of a cultivated man.

The law of ministry and medicine will have a standing because of their educational acquirements. The dentist *per se* has not, but he may have, because he will make it in spite of his profession. The first requirement for entering a dental college should be to have a good literary preparation; that would be a step in advance. It would give him a standing in the community as a gentleman and a scholar.

Another thing is our dental board. While we now have a very excellent one, thanks to the governor, who knows who will be on the next dental board, the next may possibly undo all the advance work we have at present. Now suppose we have the dental board examined, and they can be just as well as not. The dental boards should keep the colleges straight, and the colleges and societies should keep the boards filled with honorable men.

We are all human beings and personal interest will come in no matter how much we wish to have them out, they will have their influence. I believe it is the desire of nearly all of the college men, if they can, to throw a part of the responsibility on the general profession. The dental profession now throws all the responsibility on the college. The college should hold the commonwealth responsible for admitting a man to college. The college matriculate should have a better education than is now required.

The college instructor should not be required to work harder than any other man. I think the day is passed when a man can go into an office and receive the instruction necessary to make him an acceptable dentist, because there are so few men who are teachers, and the colleges should have the best men for instructors.

A very essential thing at present is to see that we have some means of punishing practitioners for malpractice; we have not adequate power at present. We should have some process which would make it impossible for an incompetent person to practice in this State.

DR. TAFT: Mr. President, I would inquire whether there is a Committee on Legislation or not. I think it is very important to have this matter in hand. There should be a committee which should be assigned to that duty, to see what change should be made in our present laws and have it ready for the next legislature. If we let it go on to the next meeting, it will continue that way and there will be nothing accomplished. If there is no such committee, one should be appointed now. I move, Mr. Chairman, that a Committee on Legislation, to consist of say five or as many as may be thought proper, be appointed to have this matter in mind. The motion was seconded, presented and carried.

Southern Branch National Dental Association.**SECOND ANNUAL MEETING.**

NEW ORLEANS, LA., FEB. 9-10-11 AND 13, 1899.

(Special Report, for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

THE second annual meeting of the Southern Branch of the National Dental Association was held in New Orleans, La., Feb. 9-10-11 and 13, 1899.

The meeting was held in joint sessions with the Louisiana State Dental Society.

The venerable Presbyterian divine, Dr. B. M. Palmer, whose reputation for eloquence is national, opened the meeting with an invocation for God's blessing and guidance.

The mayor of the city, Hon. W. C. Flower was then introduced and tendered a warm and gracious welcome to the members of the Association.

Dr. Sarrazin welcomed the Southern Branch of the National in behalf of the Louisiana Society.

The response to these addresses was made by Dr. R. K. Luckie.

Dr. Wm. Ernest Walker, of Pass Christian, Mississippi, the President of the Association, after a few preliminary remarks, proceeded to deliver the customary

Annual Address.

BY W. E. WALKER, D.D.S.

Among other topics of general interest Dr. Walker spoke as follows on the subject of the appointment of

DENTISTS IN THE ARMY AND NAVY.

He said: At our last annual meeting a committee was appointed to work in the interest of legislation in the matter of the appointment of dental surgeons in the army and navy. The national body at its meeting in Omaha had a committee appointed "to take charge of and have full control of the subject of legislation in this direction." A resolution was also adopted deprecating any independent effort in the congress on the part of other societies or individuals. I need not dwell upon the importance

of the subject. Our soldier heroes on the battle field, in the camp, in the hospital, the men on board our war vessels bear witness that the hardships to which they were subjected were too often aggravated by the sufferings incident upon neglect of oral hygiene. Dr. Nicholas Senn, lieutenant colonel in the United States Volunteers and chief of the operating staff with the army in the field, in his report on the surgery of Camp Wykoff, says: "Of the organs frequently affected among the returning soldiers were the teeth. Patients suffering from carious aching teeth were numerous. In most instances they presented evidences of serious malnutrition, following disease and exposure; suppurated alveolitis was less frequent. Infection of many oral cavities showed that teeth had been sadly neglected during the campaign. I did all I could in the way of conservative dentistry by cleaning out cavities and packing with cotton, saturated with carbolic acid, but in the majority of cases the patients returned and insisted on having the painful teeth extracted." Much has been said in favor of having a dentist attached to each regiment to look after the teeth of men and the observations at Camp Wykoff tend to support the propriety of such a much needed addition to the medical service. On the subject of

THE EDUCATION OF THE PUBLIC,

he said: A topic worthy of your earnest consideration is that of the education of the public to an appreciation of the teeth as essential portions of the general economy, of the importance of preserving them in all their integrity and the means thereto. Individual instruction from the chair, while doing much good, still reaches only those who already have ascertained a degree of knowledge or appreciation along these lines. What is needed is to reach people before they need to visit our offices and thus teach them by what means they may avoid the necessity of operative procedures. The most feasible plan thus far suggested appears to be through children in our public schools. In Mississippi, Alabama and Texas an effort is now being made to secure the co-operation of the state medical societies and the state school superintendents in enforcing an addition to the curriculum of either a special primar on oral hygiene, or an addition to the text books, the use of which is already compulsory. I submit this idea for your consideration, with a hope that the plan may be encouraged by receiving your endorsement.

LIFE INSURANCE EXAMINATIONS.

A no less important matter is that of the examination of the mouth by the medical examiners of life insurance companies, a subject which has been discussed by this body at our last meeting. Our corresponding secretary was instructed to initiate a correspondence with the officials of the leading life insurance companies of this country in an effort to ascertain their views upon the subject. We look forward with interest to his report upon the subject, as its importance is of vital interest. The condition of the teeth in its bearing upon the general health constitutes such an important factor in the calculation of longevity that it is strange that it should have been so entirely overlooked in the matter of life insurance examination.

THE JOURNAL.

I beg to enlist your interest in co-operation in the plan under consideration by the association of which we are a branch, looking to the establishment of a journal which shall be the official organ of the dental profession—a journal in which shall be published the transactions of the national association and its branches and other original ideas pertaining to dentistry and the collateral sciences.

Orthodontia and Oral Surgery.

BY G. E. HARDY, M.D., D.D.S., BALTIMORE, MD.

Dr. Hardy referred to Dr. Farrar's second volume as a masterpiece, the two volumes issued constituting the most comprehensive and complete treatise on Orthodontia ever written. He spoke of the necessary close study of the models and of the patient, and of what has to be contended with in the medicinal and anatomical surroundings, and said, "Eternal vigilance" is the price of success in regulating. Watch the appliance, watch the anchorage, watch the tooth to be moved and the teeth not to be moved, and watch the patient to see that the whole appliance is not removed from the mouth as soon as the patient reaches home. Having tried various methods and "systems" for retracting the six anterior teeth he had reached the conclusion that Angle's head-gear is the only thing that promises success. He spoke of the "Artistic treatment of natural teeth," as practiced by Dr. Younger, Dr. Payne and others, as a move in the right

direction. The results obtained by the artistic sculpturing, carving, and remodeling of badly formed teeth are truly wonderful.

DISCUSSION.

DR. YOUNGER being called upon, described what he considers the abnormal condition of the enamel surface, due to the contact of hard food substances, acids, etc. He practices removing this disintegrated surface layer, restoring and polishing the enamel to its original brilliancy and preventing decay which the roughened surface invites. In regard to retaining teeth which have been moved, he cited a case in which the tooth had a strong tendency to return to its original position—"a right superior central playing leap-frog with the left"—whenever the retainer was removed. He finally with a sharp bistoury cut loose all attachment between the tooth and the tissues. By cutting loose the contracting tissue the tooth was no longer drawn out of place, and after wearing the retainer another week there was no further trouble.

DR. HENRY W. MORGAN spoke of the importance of freeing teeth that have been moved from occlusion with the opposite teeth, unless this is such as to tend to hold them in their new position.

DR. L. M. COWARDIN spoke of a vicious habit which sometimes obtains, of so holding the tongue between or against the teeth as to interfere with attempted regulation.

DR. WALKER spoke of a case in which, in 1888, between his own college terms, he had, in a case of marked hereditary prognathic development after removing a bicuspid from each of the four quarters of the mouth, carried back simultaneously the six anterior teeth, superior and inferior, *en bloc* in six months, using the patient's heavy suit of hair as a pad at the back of the neck to support a board which served as an anchorage for the appliance placed upon the anterior teeth. He had succeeded in overcoming a hereditary deformity, enabling the patient (to whom ordinary conversation had been difficult from the fact that the lips could not be made to cover the teeth) to become a successful school teacher, with marked ability as an elocutionist.

Conservative Antrum Treatment.

DR. L. M. COWARDIN read a paper opposing tooth-extraction for the purpose of having access to the antral cavity, and afford-

ing drainage, and cited cases successfully treated through the canine fossa without the sacrifice of a tooth. In the discussion of this paper DR. J. P. CORLEY described a case in which he had filled the buccal roots of a second molar and cemented a platinum cylinder in the palatine root, filling the cavity in the tooth around the cylinder with amalgam. Through this cylinder he was able to treat and drain the antrum and the case was discharged, cured, in two weeks. He objects to treating through the canine fossa because of the obstruction offered by the soft tissues. He prefers to devitalize a tooth and treat through the root canal.

DR. L. A. SMITH described a case which he had successfully treated through a root canal, subsequently placing a porcelain crown upon the root.

DR. T. C. WEST described a case in which he inserted a silver drainage tube between a cuspid and bicuspid, making the end of the tube bonnet-shape. He washed out the cavity with salt water and treated with iodoform vapor, using Blair's vaporizer.

DR. HOLLY SMITH opposed the method advocated in the paper and by the preceding speakers. He considered such operations too conservative. The opening should be made that the cavity can be freely explored with finger and thoroughly curetted. He considers entering and draining the antrum through the root of a tooth inexpedient and unwise, as being a method requiring longer time and more concentrated medicines than by other methods.

DR. L. G. NOEL spoke of the frequent complication of nasal catarrh, when the entire mucus membrane is involved in the trouble, and thought when it was a question between saving a tooth and being embarrassed by the presence of the tooth it was better to sacrifice a sound tooth if that would give the assurance of satisfactory results. In treatment, Dr. Noel uses Lugol's solution of iodine, which is readily miscible with water and gives very beneficial results. He spoke of a condition sometimes existing in which the roots of a tooth may penetrate the floor of the antrum and be covered at the apex only by the periosteal membrane. In case of alveolar abscess the pus may lift the membrane until the entire antrum is invaded by accumulated pus, yet with an opening through the membrane. Dr. Noel does not believe in drainage tubes, but protects the opening into the antrum with a plate to prevent the ingress of food.

In closing the discussion DR. COWARDIN said that the paper

did not advocate opening roots indiscriminately for the purpose of treating the antrum, neither was the method offered as one adapted to the general treatment of diseased antrum, but only in special cases when it is desirable to avoid the sacrifice of a tooth if possible.

A Simplified Fracture Splint.

BY DR. JULES J. SARRAZIN.

He described a splint for a fractured inferior maxilla. Having secured a good model of the upper teeth, and also an accurate model of the lower teeth, break the lower cast at the place where the fracture exists, occlude the teeth and mount in an articulator. Make a simple rubber splint occluding perfectly with the upper teeth and extending lower on the gum than the exposed necks of the teeth, making its edges that meet on the gum well rounded and polished. Try in the mouth and make sure that with the jaws closed and pressed together, all parts will go in place nicely and that the occlusion of the upper teeth and the splint will be perfect. Having ready sufficient bandage that will not stretch, to wrap eight or ten times around the head and closed jaw, cheeks and ears of the patient, rapidly mix oxy-phosphate almost to a medium thick consistence, fill the inside of the splint with it, dry the lower teeth and jaw and insert the splint, bringing the splint and enclosed teeth to occlusion with the upper jaw. Bandage securely, fasten with safety pins and wait a little longer than necessary for the cement to thoroughly harden. The cement will have been forced between the proximal surfaces of the teeth, fastening the splint securely. At the next sitting remove the bandage, trim off the excess of cement and the patient can masticate on the rubber occlusal surface, appearance will not be ungainly nor speech difficult.

Before inserting the splint, it should have been partially sawed in different places, so that when ready to remove after the case has healed, the ends of the sawed lines can be easily continued with the engine bur, and the splint removed in sections. The remaining cement between the teeth that is found difficult to remove may be treated with strong alkaline baths until it dissolves.

DISCUSSION.

DR. P. J. FRIEDERICHs said that he had been quite impressed with Dr. Sarrazin's idea, but that he had not yet had a case when it would be applicable. He thought the idea of using oxy-phosphate cement *as a fixative* was original; the only difficulty he could see was in its removal, as it seemed to be necessary to remove it in pieces, while in case of excessive inflammation it was sometimes desirable to remove the splint, entire, and replace it. But the cement would certainly keep the splint in place, and the parts in perfect apposition, allowing nature to do her work.

In answer to a question, Dr. Sarrazin stated that the splint covered the occlusal surface of the lower teeth, and that the upper teeth occluded with the surface of the splint.

A Case in Oral Surgery.

BY DR. R. C. YOUNG, ANNISTON, ALA.

The patient when first seen was found sitting upright in a plain split-bottom chair in a room in the rear part of a drug store, a young man some twenty-three years of age, wrapped in a sheet saturated with blood, and supporting in his hand a dangling, unshapely mass of bone and teeth; the whole side of his face torn out. He was an operator in a cotton mill two miles out in the country, whence he had been brought in in an open buggy over a rough country road, nothing having been done for him except an hypodermic injection of morphia and strychnin. He had climbed up a ladder to adjust a belt, one end of the ladder resting on a revolving shaft, the other on a slippery floor. The ladder had evidently slipped and he had fallen upon the machine with his mouth open. The right cheek was cut open from the inner canthus to the commissure of the lip, and from a point about over the glenoid cavity joining a cut about on a line with the alæ nasi; a deep cut straight across the upper lip just under the nose, and six or eight cuts or punctures upon the chin. The nose had a multiple fracture and was driven over to the left; the whole of the upper right maxillary bone had been cut and torn completely from the face and was hanging upon the chin dangling by a small connection of gum tissue not wider than a lady's thumb-nail, just over the lateral and cuspid. The bone had to be held to keep it from swinging about at each movement of the

man. The cleft extended from the median line between the centrals along the line of articulation with the opposite maxillary, thence along the naso-maxillary articulation to floor of orbit, thence across to malo-maxillary articulation, thence to sphenomaxillary foramen across hard palate from incisor foramen to articulation of palate bone with pterygoid process of sphenoid.

Raising flaps of the wound in the cheek the optic nerve could be seen and touched just as it enters in to the sclerotic tunic; passing the finger down the pharynx the pterygoid process could be felt, rough and jagged where the articulation had been torn loose. The floor of the orbit was in plain view. The wound having been made as with a blunt instrument, was more of a laceration and wrenching apart, dragging the vessels out to their utmost, so that when they broke they contracted as though torsion had been used; the arteries had so contracted that they could not be taken up.

The mill superintendent begged me to save the bone, which contained all the teeth on the right side from the central incisor to the third molar and including the tuberosity.

After many futile attempts I got the parts together, preserving the facial aspect, which was not unlike putting together a Chinese puzzle. To hold the bone up two ligatures were used, caught in the gum over the first molar, carried through the cheek and tied outside just under the eye. A wire suture was passed through the edges of the wound on hard palate, thence between the teeth to the opposite side. Three wires held the bone laterally; a wire was also passed from cuspid to cuspid, the bone being thus held up in three ways. The lower incisors were knocked out or broken off and the process driven back so that the teeth pointed down the throat. This was replaced and held by wire. The bone of the nose was fractured in several places and the nose much displaced. After the fracture was reduced, rubber tubes the size of the little finger and ribbed were inserted in the nostrils, to hold the parts in shape and allow the patient to breathe through the nose. Forty odd stitches were taken in the soft tissue of the nose. In the corner of the lip a piece of tissue the size of a rubber crown on a lead pencil was hanging by a thread as it were, and almost black, but this was put back in place and held with delicate stitches and served to restore the shape of the mouth. The external wounds were dressed with

simple cerate laid on, and absorbent cotton placed over this. The whole was done up with a Gibson bandage and instructions given to syringe mouth three times a day with a ten per cent. solution of boric acid.

After the fifth day the patient began to improve rapidly and made a good recovery, coming to the office after the third week for treatment. The external wound left a wonderfully small amount of eschar, the nose was perfect and he uses his teeth as perfectly as though they had never been out of his head. The teeth are sound and seem to be alive, with the exception of the third molar, which exfoliated. There is a small opening in the hard palate which will probably fill up in time. It has been greatly reduced by paring the edges of the break stimulating granulation.

This case shows the wonderful recuperative power of the facial region. The ingenuity of manipulation, the familiarity with the minute anatomy of the parts, the realization of the necessity of strict attention to asepsis fits the dental surgeon very peculiarly to attend to this class of accidents.

DR. WALKER stated that he had seen the patient some months after the accident, and that while the face was somewhat scarred, it was not badly; there was still a small opening in the hard palate which had not quite filled up.

(To be continued.)

Odontological Society of Cincinnati.

REGULAR monthly meeting, Dec. 30, 1898, President Rose in the chair. The special order for the evening was a paper entitled :

The Business Side of Dentistry.

BY DR. A. A. KUMLER, CINCINNATI, O.

What is said in this paper on the Business Side of Dentistry would, I think, apply to any profession.

In the beginning of a dental practice, the question of *patients*, is probably the most important. It has occurred to me that it often is as difficult to get the *fee*, after the work is done, as it is to secure the patient.

For a young man this is especially discouraging, and unless he husband his resources, he will find himself financially embarrassed and unable to "make both ends meet."

Under these circumstances, it is hard for a conscientious man to know what to do. He wants to do what is right, that is, be professional, but he must live and the landlord wants his rent when it is due.

Now the question comes, what shall be done to meet the present bill and other necessary expenses. Is it better to borrow the money, if he is so fortunate as to be able, to pay these bills, and wait until the people that owe him are ready to pay, or shall he present his bill, as is done in any well conducted business?

A few years ago, I did some work for a lady, whose husband was a business man. I waited, possibly, two months and had not sent the bill. The lady came to my office and asked why I had not sent it and said her husband thought I was not very business-like. I have never forgotten it, and think he was right. Some people will put off paying a professional bill as long as possible, with the sole purpose of using the money themselves. I have often wondered whether it would not be perfectly legitimate and honorable to meet such people on a business-like basis. In most businesses, bills are made with the understanding that it will be so much *cash*, and so much additional in a given time. Why could not a dentist make out his bill with a discount for cash and an increase of so much per cent. if not paid within a certain time? Of course I know that this is diametrically antagonistic to the opinion of some well known and reliable dentists, but I am speaking of the man who depends upon his profession for support and who does not have sufficient financial backing to enable him to meet all of his obligations promptly.

It seems to me that being lax in one phase of the business will sooner or later involve the whole individual. If the dentist's bills are not promptly collected, it will not be possible for him to pay *his* bills, and if the dentist does not exert himself to collect his dues, he will soon get to the point where he will not care to exert himself and cannot if he would, to pay the obligations he owes.

I think that if I do a given amount of work for a person, that amount is due me, just the same as if I would sell that person the same amount in merchandise. Is it not a fact that dental

physicians are considered as *very poor pay*, by business people, and is it not another fact, that if one of us, should go to any merchant in our own city, where he is a stranger, and order a bill of goods sent to his house and tell the merchant that he is a dentist, that the goods would not be delivered until they were paid for, or at least until the merchant could look him up? And why is this? Almost any business man has more or less work done on his own teeth or those of his family. He does not pay his dentist promptly either because he thinks he can use the money for a time and the bill remain the same, or because the dentist is not prompt about making an effort to collect. So he reasons that the dentist is probably as careless about collecting from others as he is from himself, and immediately doubts the ability of the dentist to pay for goods bought.

I was never so forcibly impressed with financial standing of dentists, as I was once when a drummer for a dental house called on me. It occurred to me to ask him if he was not taking a serious risk in leaving goods not paid for. He answered, by taking from his pocket a long list of dentists' names, with their financial standing opposite. I was very much impressed with the fewness of the names that were marked first class. Even those who supply us with our necessities for carrying on our business, look upon us suspiciously when they consider our ability to pay our debts.

It often seems that a large per cent. of the dentists try to justify their business or lack of business ability by Ingersolizing that part of the Lord's Prayer, "Forgive us our debts as we forgive our debtors," and as far as possible make that one of the most practical phases of their business.

DISCUSSION.

DR. J. R. CALLAHAN: I agree with the essayist in so far as he insinuates that the professional man is a poor business man; yet I believe that the dentist is as good a business man as the average physician or lawyer. The reason why the dentist is not a better business manager, as I see it, is that he pays strict attention to professional demands and neglects the financial side altogether. A dentist said to me to-day, "Doctor, I have a little device in my office to light my Bunsen burner, or my lamp, which I think saves me something like ten cents a day in time. When

I reach for my lamp there is a little button, which, on being touched, at once lights the lamp." Now, that is an illustration of looking after the small details, saving of time, which runs into money.

Let us aim to save all the time possible in every operation, to get through with it speedily, not only because that is good business economy, but because our patients desire it.

DR. M. H. FLETCHER: One of the ideas in the paper that struck me particularly was the statement that business qualifications are not possessed apparently, or not shown, by professional men. When I entered the dental profession it was after a business experience of some ten years, which taught me many things from a business stand-point that I could not have acquired as a professional man. And that which has borne me best fruit is the habit I learned of doing business as I considered a business man should. Now, in the first place, everybody who desires to pay their bills, whether they be professional or otherwise, want to know what the amount of the bill is. My own practice is to send a statement on the first of the month following the completion of the operation. I don't follow that up with another statement for some time, depending upon who the patient is.

I want further to say, that I believe that the success of a professional man is largely augmented, as well as his standing elevated, by his being a good business man; in other words, if your patients know that you expect your bills to be paid, and paid promptly, that will indicate to them that your time is valuable in your own estimation. Your patients don't estimate your services any higher than you estimate them yourself. If you don't show your patients, by sending them a statement at the proper time, that your services are valuable, that you have a business side to your make-up, you are lowered in their estimation. So, to you younger men who want to learn how to be proficient professional men, I should recommend to you as one of the steps which you should practice, that very thing, to learn business methods and to practice them.

DR. W. A. PRICE: It gives me very great pleasure to be with you. This is one of the greatest problems that confronts our profession, at least with me, how to get just returns for services rendered. I am ashamed of my inability to get my bills paid promptly. I had hoped that while in Cincinnati (knowing

nothing of the subject which had been assigned as a paper here to-night), that I might obtain some suggestions that would determine in my mind a plan for improvement in this direction. I certainly shall be more strict after hearing this much of the discussion, and the paper read, and I shall take very great interest in reading the balance of the discussion when it appears in the OHIO JOURNAL. I thank you for your hospitality. My visit in Cincinnati has been one continual feast; I go away mentally intoxicated; I have gained so many new points.

DR. N. S. HOFF: I think that physicians, as a class, are what we call poor business men; they don't collect their bills. Yet how can they collect them when their patients are not able to pay? We have very many provident people; but the majority are not so provident as to provide for that sort of an emergency. The same occurs in dentistry. How many people come into your office, and as you look over their mouths, you find possibly that instead of the single cavity, of which they tell you, that there are two or more, or perhaps other conditions exist, which, properly treated, would require expensive manipulation, and the patient is not ready for such an emergency. If you ask them to pay their bills with the same promptness as they would their butcher or their baker; if you ask them to pay for each operation when done, although they did not anticipate its necessity in advance, and could not have known of previous to the time of their visit to your office, they feel that they cannot do it. They confess that it was more of an operation than they expected, and say they are unprepared to pay for it; so they ask to have it charged, and you get into the habit of letting it all go and awaiting their future memory to settle.

Many professional men think it beneath their dignity to itemize a bill. I think bills ought to be itemized to a certain extent; don't think it necessary to show how much gold used, how much amalgam, and all that sort of thing, but each item certainly ought to be indicated so the patient would have some conception of what was done, what service was rendered for the fee asked. If our bills are made out on this basis and sent in promptly, our patients will consider us more business-like.

DR. H. T. SMITH: The paper is certainly a very interesting one to us all, but I think the impression ought not to go abroad that the credit of dentists and of professional men is not what it

should be. It seems to me that as people go, as the credits of people are put down here in the city, that the dentists would stand as well as manufacturing people and others. One phase of the subject, which I had rather hoped the essayist would touch upon, was the method of keeping dentists' accounts. I think it is generally conceded that professional men are careless business men. It seems to me the older a man grows, unless he adopts a system of taking care of his accounts and of recording his operations and fixing charges, the more careless he grows. I should like, therefore, to hear discussion of all methods of keeping accounts and of recording operations and marking diagrams.

DR. J. R. CALLAHAN: Some gentleman in discussing this question a few moments ago, made the statement that men value your services as you value them yourself. That is the whole thing in a nutshell. They have a respect for you if you have respect for yourself. If you have not, they have none for you, not the least bit.

Dr. Hoff talked about itemizing bills. On that head there are two extremes. Dr. Hoff was in favor of one view, and Dr. Heise would be of the other. There is where you are to use judgment. It seems to me that the best plan is never to itemize if you can possibly avoid it. Then comes in another point, and that is the motto that I would have you hang upon your wall—"Patients will value you as you value yourself." If you value your services from the itemized bill stand-point, so much for this, so much for that, etc., instead of for the general result, for your services in the particular case to the particular person, then the patient will learn to do likewise.

DR. HEISE: In order to fly my kite I must have a little wind of opposition! I don't like to take issue with Dr. Hoff, but I think the greatest mistake that can be made in a profession, especially such as the dental profession, as well as in that of law, or of medicine, is itemizing accounts. People think you are a mere tradesman, a mere dealer in gold and amalgam; that you want so much for a gold filling, so much for an amalgam filling; but what do they know about it? They know nothing about it. You charge this man ten dollars for a gold filling, not because you have put in so much service in time or material, but because you have taken that patient's particular condition and needs into consideration. You make your charge for the aggre-

gate benefit conferred by your services, by your professional skill, not for the mere number of hours of time you spent with him. A surgeon never itemizes the particular bones set, the quantity of splints or bandages used; a lawyer never measures the time given to argument upon a case. They charge for services rendered, and according to the ability of the party to pay and the importance of the benefit conferred. That is the only true basis of charge. On any other basis you will never get people to understand the value of your services, although you may collect money of them. But you will never get paid for your services.

DR. STACEY: I believe I had more business about me the first year of my practice as a dentist than I had the second, and more the second than I have had the third! During my first year I think I collected about nine-tenths of my money. I have never made a practice of itemizing. I never but once was asked to render such a bill. I can't see how our fees are uniform any way; our bills are graded, I believe, more by people's ability to pay. If a man had a practice confined exclusively to people of like grade of ability to pay he might have uniform prices, but the majority of dentists I don't believe have; they have some wealthy people, and many not so wealthy, perhaps, and then some absolutely poor.

DR. HOFF: Should you not indicate that service, so that they will be able to estimate the amount and value?

DR. HEISE: They cannot place the value on the service rendered. You charge for the benefit resulting to the patient from the whole operation, not just the particular changes produced upon the individual tooth or part operated on. How many men devote all their energies to the filling, say, of one tooth, not taking at all into consideration other parts affected, the condition of the gum, etc. Our profession, while mechanical in part, is not purely a question of mechanics, to be made in every case the subject of an itemized charge, so much for a gold filling, so much for amalgam, etc. We should charge for our services as a whole in the benefit conferred. Thus, the so-called cleaning of the teeth, while in itself a simple operation, yet suggested and performed at the right time and proper manner is an important process in the treatment of pyorrhea alveolaris, or in the prevention or cure of some other condition, which would result most disastrously to the health of the patients' mouth and teeth. Item-

izing tends to isolate in the mind of the patient the separate process, thus throwing into shadow the importance of the particular process in the total of the services performed. The value of the services as a whole should be measured by the benefit conferred, ability of the operator, difficulty of the operation, restricted of necessity by the circumstances of the case.

DR. SWENY: We as dentists possibly have acquired the reputation of being poor business men simply from the fact that the older men in the profession have been lax in their business methods in times past. I think it has been customary for some of the older practitioners to send in their bills once or twice a year. It comes to a point whether we shall be professional business men, or simply professional men. Whether it be a breach of professional courtesy for us to send out our bills each month is for us to decide; and I think it is for the younger men of the profession to emphasize the matter of regular payment of bills more than it has been done in times past.

DR. CALLAHAN: As to keeping records, I don't know that I am prepared to say off-hand that every man should adopt the card system; the only objection, however, that I have heard anyone urge is the possible chance of losing some of those cards; but that, it appears to me, would be carelessness altogether. One of their advantages is, that you can enter the full details of the particular case on a card, and if the card becomes filled, another can be attached to it without interfering at all with the other cards; whereas, with a ledger account, if the page becomes full you cannot go on consecutively, because there probably is another account immediately following, and you must take the account to a page in a different part of the book; or if the book is filled, carry that particular one into another book, and soon you can hardly tell, without much trouble, where to find what you want to know as to any particular case, in regard to conditions, treatment, etc. If you have to hunt through a dusty ledger for the information, you will make shift to do without it, for you haven't the time to get the book down off the shelf of some dark closet, and you let it go. But with the card system, without the loss of a minute of time, you can get exactly what you want to know. By using handy fasteners, which you can obtain at any stationers, you can attach two or more cards, sufficient for full details thus recorded, by means of the index which is always up to date. The ease

with which the record is kept and referred to encourages you to keep fuller records, and these are of constantly increasing value to you as your practice grows, from year to year.

DR. H. T. SMITH: The Trigg system has been mentioned, and I am very glad it has. We have had for more than a year a box of the cards, and I have looked over it from time to time; but it never satisfied me as being the ideal system. Some advantages which Dr. Callahan mentions for the system can be gotten out of its use; and one objection that he mentions, that of carelessness in losing a card, is a very valid objection; and think in looking through accounts for two or three years past, the matter of the filling up of two or three pages with details of operations is needless. I don't believe that it occurs; and I have myself a plan by which I think accounts can be very nicely kept in the ledger, that is by having a book made with a better diagram than that in the Trigg system; that diagram is poor. My system is to paste in pages for the different members of the family right opposite the page where the account is kept of the party by whom the bill is paid.

DR. HOFF: What kind of a standing would such a method of keeping accounts on cards give you in the courts?

DR. CALLAHAN: The day-book or book of original entry is the book that goes in court; and the card is such original entry. I make no entries whatever except on the cards.

DR. McLAUGHLIN: I use simply one book, Allport's Dental Ledger. I don't believe in itemizing. Like Dr. Heise, I make my bills out, "To professional services rendered," ledger page so and so; and when they bring back the bill I can mark on ledger, "Paid." If they want to look at the items, they can do so.

DR. HOFF: I think that Dr. Callahan has not laid enough emphasis on the value of this card system in the particular that it allows you to keep one class of cards separate from the other. It is a nuisance to me to go back and hunt up an account transferred from one ledger to another, and that is avoided by the card system, which also keeps separate the uncompleted work. I keep my accounts collected up pretty closely. Dr. Callahan says he does the same. You can pick up a package of cards of completed work, and run over it quickly and see whom you can go after for money; that is a valuable feature of the card system. I don't like the diagram upon it. It is not fit to use. I am using

a card system of my own. I simply went down to the printing-office and had some large strong card board cut up into cards as large as that page, I had them ruled off just as a ledger would be ruled, except on top where the name and address would be; I had cuts to show the location of the filling, and in the line down below I write whatever the operation has been, and put down the price charged for it. The cards in the Trigg system cost one cent apiece; these cards cost me \$4.50 a 1,000, and I have a good set of cards a great deal heavier and more durable, and a great deal larger. I had a carpenter make me a box into which I set these cards, which cost me \$2.25.

DR. KUMLER: Would it be professional for a person to make out a regular bill, and then offer a discount for cash?

DR. CALLAHAN: I don't care to answer the question directly. I would say, however, that you lose time, lose money, and lose the respect of your patient unless you insist upon your bill. I have made discounts where I felt I was not going to get anything, and was lucky to get what they would pay.

A MEMBER: Wouldn't it be better to make out the bill to draw at a certain rate of interest after sixty days?

DR. CALLAHAN: Then they would come around and offer you the original amount after the limit had expired, and you would be so glad to get it that you would take it. It makes no difference what you hold out that you will do, or how many signs you hang up in your office. The thing is, what you actually do. It is that which counts.

DR. KUMLER: I agree with what has been said. In my practice I have people who come to me who are considered first-class. But apparently they will not pay their bills until you get after them. Those are the kind of people that have given me the most trouble. I have bills on my books upon which I would be very glad to take part as payment and settle on such basis. I have done everything up to date that I can do and that has been suggested.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

Modern Methods of Treatment of Diseased Pulps.—About a year ago the writer reported 500 cases of treatment of the pulp by the mummification process by means of formaldehyde after previous cauterization with arsenic. Last year he treated about 400 cases of acute and chronic pulpitis in molars and premolars in the following way, excluding all cases of purulent pulpitis and beginning gangrene. Two or three days after cauterization with arsenious acid the pulp chamber was wide open, the debris washed out, the pulp stumps removed with Donaldson's cleapsers, and the root canals treated by the modified sulfuric acid method.—Formaldehyde is excluded in such treatments. Should the remaining pulp stumps show strong vital reaction, the formaldehyde treatment was invariably employed. After placing the rubber dam in position, the pulp chamber is washed with a 5-10 % solution of formaldehyde, the so called "formalin bath," and then filled with formalin paste, which we have now put up in collapsible tubes, and a zinc phosphate filling is placed over this. The results obtained were uniformly good. Only four times did we have to remove the filling after some time, the reason being a beginning pericementitis. Without doubt, there had been a primary gangrene present which could not be diagnosed at the time. An important fact is the purity of the formaldehyde solution and a properly prepared paste. The solution should be renewed every week as by contact with air the formaldehyde will easily split up in methyl alcohol and formic acid. The formaldehyde paste in collapsible tin tubes is a very convenient form of keeping and handling the material, but a higher percentage of formaldehyde and a better consistency of the old formula (vide *Ohio Dental Journal*, October, '98,) is recommended. By actual experiments I have found that thymol penetrates the pulp stumps very slowly. Formaldehyde will coagulate the pulp stump in a few hours, in rare cases in a few days, while the slightly soluble thymol act for weeks. The high percentage of cocain should not be lessened, as

it will help in overcoming the pain produced by the formaldehyde vapors upon the vital pulp stumps.

The direct action of the formaldehyde upon the inflamed pulp will not cause a restitution of the process of inflammation; nay, on the contrary, a coagulation-necrosis or death of the tissues will result. The writer warns against the direct application of formaldehyde upon the inflamed pulp in its use as a capping medium. The sovereign remedy for the treatment of inflamed pulp is and will be arsenious acid and the only unobjectionable after-treatment is the total extirpation of the pulp and the antiseptic root filling. All cases of gangrene of the pulp are treated by Callahan's method, using 50 % sulfuric acid and sodium peroxid as a neutralizing agent. The results obtained are permanently good and the opinion is still held that Callahan's method means the greatest progress in the treatment of root-canals since the introduction of antiseptis. After the sulfuric acid treatment, the root-canals are filled with formalin paste. In about one or two weeks the whole process is repeated, a filling placed in the pulp chamber, and a permanent filling inserted. The antiseptic action of the formaldehyde vapors in statu nascenti in the root-canals will not be equalized by any of the known antiseptics.—*Dr. Bönnecker Oest.-ung V. J. Z.*

Endentol, a new local obtundent for hypersensitive dentine. Metzger makes the following statement concerning the use of endentol: In the new preparation called endentol we have a timely recommendable medium for locally anesthetizing hypersensitive dentine. It will, provided it is applied in the right way, give almost always uniformly good results. In most cases prompt action is obtained lasting from $\frac{1}{4}$ to $\frac{1}{2}$ minute, and so far, it is not surpassed by any of the known preparations. Previous to the application, the cavity should be well dried, and if necessary, the treatment can be repeated three to four times. For experimental purposes, the saliva was allowed to enter the cavity in a molar, the endentol applied on a pledget of cotton, and still, the hypersensitiveness of the dentine was overcome in a short time. It seems to be almost without question that endentol will earn the thousand mark stake if it should not be superseded by the invention of more intense acting preparation of the same harmless nature.—*Metzger, D. Z. W.-schrift.*

(Some years ago Dr. Herbst, of Bremen, offered through the Central Society of German Dentists a reward of a thousand marks, equal to about two hundred and thirty dollars for the invention of a local obtundent to overcome hypersensitiveness of dentine. The offer is still open.—REP.)

Dr. Smoeker, of Vienna, has constructed a small apparatus for keeping mercury for dental purposes. The mercury is kept in a small cylinder. By means of a screw-tread a plunger can be forced in the bottle. The top of the plunger carries a metal disk which is divided in twenty equal parts. An immovable indicator is fastened to this disk. By screwing the plunger into the bottle, the exact amount of mercury which will leave the container through a small tube, is easily determined. Each turn of the metal disk from line to line corresponds to three grains of mercury.

Dr. Koerner, of Halle, had some experiments in accidental opening of Highmore's antrum. During the last two years the author had five such perforations resulting from the extraction of first and second upper molars. Mostly the buccal roots penetrate into the antrum, being covered with a very thin lamellae of bone which is easily torn away during extraction. Exploring the empty alveoli with a sound will quickly reveal any perforation. Iodoform gauze should be packed in the alveolus and in a short time the opening will close up.

A Case of Resorption of the Root of a Permanent Molar.—The author filled a superior first molar, of a young lady of about fifteen years of age, with amalgam. The cavity was large but it did not reach to the pulp. About a year after the tooth became diseased with pericementitis. As the pain in the tooth did not diminish in about two weeks, the patient demanded the extraction. The distal root was missing. By sounding he felt the remnant of the root, removed it and found it to be a sound molar fitting exactly in the space of absorption. The pulp of the absorbed tooth was wholly in tact. The resorption of the roots of the temporary teeth is only possible when the pulp is sound. Roots of temporary teeth where the pulps are dead, will not be absorbed but pushed aside by the underlying tooth. It is known that the crowns of the teeth before eruption are covered by a fibrous sack and the question is if these covering membranes are the organs of resorption.—*Dr. E. Nessel, Wiener Z. M.*

At present we are not able to give a definite judgment about the results of the treatment of the pulps with formalin. The old methods are still the only ones which can be practiced without objection. In all cases of irritation or in partial pulpitis when good results have been obtained with formalin, the old methods would have produced the same effect. We cannot do more than produce a seemingly healthy condition. Purulent or partial necrotic pulps and most likely total pulpitis will not be materially affected. The only disputable point is probably the result which may be obtained with formalin in pulp-amputation and the treatment of putrid root-canals.—*Dr. Greever. Wiener Z. M.*

Death Under Ethyl Bromide Narcosis.—A lady of about 24 years had three teeth extracted. Bromide of ethyl was used as an anesthetic. The operation was performed by a non-licensed dentist without assistance of a physician. After the operation, the lady opened her eyes with some difficulty for a moment only, took three or four deep inspirations and sank back in the chair. The dentist did everything in his power but employed mostly unsuitable means. The quickly-called physician pronounced the lady dead. Prof. Partsch, of Breslau, gave expert testimony in the case, stating that: "Correct means for saving life would in this case have surely overcome the apparent death of the patient and restored her to life again." The dentist was sentenced to six months' imprisonment.—*Pert.-ung, V. J. Z.*

Quinine Sulphate as a Dentine Anesthetic.—Le Nonnier (Nice) refers in a paper read before the society of French dentists to the internal administration of sulphate of quinine in cases of hypersensitiveness of dentine. He orders his patient to take eight grains of quinine for two days before treatment and he claims to have had excellent results. Schwarz made the following statement in this connection: A very nervous lady had tried five different dentists in Paris to have her teeth filled, but the dentine was so highly sensitive that she would not submit to the operation. Schwarz gave her three powders of quinine, of eight grains each, to be taken at intervals of forty-eight hours. The sensibility of the dentine was entirely lost and he could fill three cavities at the first sitting.—*L'Odontologie.*

ALL SORTS.

The Uses of Guaiacol in Dentistry.

As an obtundent for sensitive dentine I believe guaiacol to be fully equal to cocain. Placed in a sensitive cavity of decay and thoroughly dried by the use of the hot-air blast, it will penetrate far into the tubuli and render subsequent excavation almost painless.

When preparing cavities on the labial surfaces of the incisors and buccal surfaces of the bicuspsids, extending well up under the gingival border, a drop of guaiacol placed thereon will enable the operator to tie ligatures or force the gums out of the way with little or no pain. It is also a good styptic, and in those cases just mentioned aids materially in arresting any hemorrhage which may follow.

As a disinfectant and germicide guaiacol is a valuable agent in the treatment of septic root canals. A little more than a year ago we destroyed the pulp of a tooth by the use of arsenic. Twenty-four hours afterward we removed the arsenic, opened up and washed out the cavity with warm water. We then placed a drop of guaiacol in pulp canal and sealed up with gutta-percha. Thirteen months subsequent to this appointment the patient returned and we found the pulp canal and its contents in a non-septic condition, having given the patient no trouble whatever.

For use hypodermically for the extraction of teeth, guaiacol may be prepared in one to 10 or 20 parts of sterilized olive oil. For this purpose it is safer than cocain, and can be used in much larger quantities without danger of producing toxic effects.

It will also be found useful in connection with arsenic in the destruction of the pulp of a tooth, allaying or preventing inflammation and pain while the arsenic is doing its work.—A. O. HOOKER, *Pac. Med. Dental Gazette*.

The Restoration of Badly Decayed or Broken Teeth by Gold Fillings made Outside the Mouth.

After having put the tooth in a proper state to receive the filling, carefully bevel off all edges of the enamel as flat as possible, also weak places not of necessity broken down, as there is no hammering to be done on the tooth; fit a gold screw loosely to the root-canal, allowing sufficient to project to come to the edge of filling when completed. Take a small piece of hard wax, warm and mold over end of screw to proper contour, just as you want your gold filling to be on completion. Cool with water

to harden, loosen, remove, and correct any irregularities noted; care must be taken to get a perfect impression of the borders of the enamel in the wax, as on this depends the success of the operation. If correct, return to tooth, and take an impression in plaster with plug *in situ*; if the plug does not come away with the impression, it should be carefully removed and put in its proper position in the impression. The gold screw that projects from the wax should then be heavily varnished, or a thin film of wax run on it, to prevent its amalgamation, and also to facilitate its removal after the filling has been made. S. S. White copper amalgam is then prepared to the condition known as "buttery," the impression filled with it and set aside to harden for twenty-four hours or more.

The impression may then be opened, the wax removed, the model cemented or fastened to anything easily held in the jaws of a vise, and the filling built down over the gold screw that projects from the amalgam. Retaining pits may also be drilled, if thought necessary. After the filling is made, by carefully warming it can be removed from the model intact, taken to the chair, and be cemented to the tooth in the mouth. If very little hammering is done at the commencement of the filling, the edges will come away from the amalgam model sharply defined.

There should be no polishing done on the model, to prevent discoloration. This should be done in the mouth after the cement has hardened, but another sitting is preferable for the final finish and polish.—W. E. PERRETT, *Cosmos*.

Hyperemia and Inflammation of the Pulp of Teeth. Treatment.

Hyperemia and inflammation of the pulps of teeth are induced by a variety of causes, but the general cases requiring treatment are—

- (a) These are exposures or approximate exposures of the pulp;
- (b) the conditions which follow the conservative treatment of the pulp.

The first requirement is to protect the organ so far as possible from temperatures beyond the range in either direction of the limits of toleration. Secondly, to make continued application of aconitum until the symptomatology indicates either a progress toward recovery, or in the direction of severe inflammation or necrosis of the pulp.

Aconite, so far as I am aware, combined with a slight degree of counter-irritation, is the only therapeutic means which we have to effect control of the pulp when it is desirable to make a profound impression upon it, and where the conditions are such as to lead to the probability of its recovery. In my experience topical applications directly to the pulp are of little value toward its restoration after it becomes actually exposed.

If salvable, I find it is safer to proceed to give an immediate protective capping and a non-conductive stopping.

The applicability of aconite consists in its property of depression of the sensory nerves, and that when locally applied it is a powerful paralyzant to the sensory nerves and acts more particularly upon their peripheral endings.

It has been claimed that aconitum has an influence over the capillary circulation, but this has not been established. If it be so, the action is probably to be found in its primary influence over the sensory nerve terminals.

The application of aconitum in the mouth requires care to avoid its distribution beyond the local region to be brought under its influence. To effect this, and at the same time to produce some counter-irritation, I combine the tincture with chloroform, equal parts. A pledget of cotton to cover an area about the size of the first phalanx of the index finger is saturated with the formula, and then squeezed between layers of muslin or absorbent paper until it is comparatively dry. This is to prevent any escape of the medicament into the mouth, to which it is irritating, or to the throat, where it is extremely distressing. It is then placed upon the gum over the affected tooth, and retained there for twelve to fifteen seconds. It is of the greatest importance to first rub from the gum the coating of mucus, which would otherwise interpose against the absorption of the aconite. It is also better that at the moment of application the surface be dry. I am thus minute in these directions, for in the carefulness of the treatment much of the result depends.

In marked cases the applications should be made on alternate days, or even each day during aggravation. In the latter it should be applied on the buccal side one day, and the next day upon the lingual aspect. As amelioration takes place, the periods between the applications are lengthened.

In the cases where treatment is given at the outset of the occurrence of disturbance, one or two applications are often sufficient. In neglected cases many may be required.—LOUIS JACK, *Cosmos*.

Solution of the Inter-State License Problem.

In an excellent paper read before the Second District Dental Society and published in *Items*, Dr. E. C. Kirk refers to the solution of the Inter-State problem as follows:

The complexities which have arisen by virtue of the principle of State sovereignty have been sought to be adjusted by two methods.

First, by constitutional amendment bearing upon certain relations diversely controlled by State laws, and secondly, by securing uniformity of legislation on specified subjects throughout the States. The first method has been tried and has been declared by the highest legal authorities of this country to be impossible of accomplishment. It is defective in principle because antagonistic to the spirit of the federal constitution which is adverse to the centralizing of power in any degree that will interfere with the right of the people to govern themselves.

The second method, that of securing uniformity of State legislation, is, in view of the impossibility of the first, the only practical and equitable means available. The American Bar Association, a national body with subordinate State branches, has been organized among other things for the especial object of securing uniformity of State laws, and they are working towards that end by the influence they can bring to bear on State legislatures after having systematically codified existing statutes, and evolved therefrom forms of laws suitable for general enactment. Their method is the result of a crystallized wisdom of the best legal talent of this country, and as our problem of unification is the same as theirs, our method to be successful must also be the same.

Are we ready to proceed in this matter? Can our legislative needs be defined in any particulars as to which we can all agree as being essential and applicable with equity to the whole dental profession of this country? I think we are justified in taking the affirmative view of the question at least as related to the main fundamental principles of dental legislation.

The first and most important principle which we should admit and agree upon is that the right of the State to determine the qualifications of its professional men is a constitutional right and has never been successfully combated, which means that the State has the right to establish its standards of qualification and to ascertain by any reasonable means whether they have been attained before granting the license to practice. In many cases this constitutional right has been relegated by charter to dental educational institutions.

Under existing conditions I am convinced that the best interests of dentistry and especially of dental education demand that this relegation of licensing power to the colleges shall be restored to the State in all cases and its execution be vested in properly constituted State boards of dental examiners. The restoration of the licensing power to the States under a uniform dental law prescribing the maximum professional qualification would inevitably result in making financial competition among our educational institutions secondary to a competition toward excellence of educational product.

But in order that opposition to the loss of licensing power by the colleges shall be overcome it is essential that both the college authorities as well as their graduates shall have the assurance that the applicant for license will receive equitable and intelligent treatment by the examining boards. Satisfactory assurance on these points is only practically attainable by requiring that the licensing examination in all its details and results be made a matter of record open to inspection by all the parties in interest with adequate provision for appeal in case of error, incompetence, or injustice in its conduct. Under these conditions the colleges have manifested their willingness to surrender their chartered licensing power as witness the fact that while the present dental statute of Pennsylvania involving this principle was pending passage, the authorities of the five dental colleges of that State made a personal appeal to the Legislature requesting favorable action upon it.

The reason for opposition on the part of the colleges to surrender to the State of their chartered right to license their own graduates on any other basis is not far to seek. Where the law does not provide that the licensing examination shall be a matter of record and subject to appeal, the State by its dental law says in effect, "we discredit the college examination and impose greater confidence in the integrity and fairness of the State examining board," a proposition which is untenable because inequitable. But it may be asked why should the State licensing examination be a matter of record and subject to appeal any more than examination for the dental degree? In answer it may be said that the licensing examination is a test of qualification with reference to the standard prescribed by the State in the interest of the public weal, and the public are entitled as well as the parties in interest to know that the test has been correctly applied. Further, it is a needed and wholesome safeguard against incompetency of the examiner under existing modes of appointment.

UNIFORM METHOD OF APPOINTING EXAMINERS ADVOCATED.

Another important feature upon which we should endeavor to secure uniformity in our legislation is the selection of State examiners in all cases by the dental profession, they being best fitted to judge of the qualifications for that office. Dental examiners should be nominated, if not directly elected by the State dental societies or by accredited chartered local societies in the absence of State societies. The exclusion of political influence in the creation of examining boards should be as complete as possible for obvious reasons.

INTERSTATE LICENSE TO BE LIMITED.

Provision for interstate recognition of licences should be made only among those States having not only the maximum standard of qualifica-

tion but which provide for an open record of the licensing examination in order that any board accepting a foreign license may have access to the results of the examination on the basis of which such license was granted, for purpose of verification.

Before interstate recognition of licenses is made general both maximum standard and open record examinations must be made general.

Are these conditions impracticable? Perhaps the suggestion that they are possible may be regarded as Utopian. I trust it is not. To promote the unification of State dental laws is one of the avowed purposes and objects of our National Association of Dental Examiners, and that body has even formulated the draft of a law containing many admirable features which they at one time recommended for general adoption by the States. Since that draft was published, our knowledge of the subject of dental legislation has advanced and it would seem wise to embody the results of our increased wisdom in any new effort in that direction.

Practical Hints Regarding Spatula and Slab in Cement Mixing.

From an article by Dr. W. B. Ames, in the *Dental Review*, we extract as follows: In the matter of spatula and slab for cement mixing I have decided preferences. I insist on a generously proportioned spatula, and I prefer a slab which gives me plenty of room to spread myself and the material. I also insist on a noncorrosive spatula, and I know of no base metal or combination from which such a spatula can be constructed. If an acid solution has been properly compounded and brought to zero, any solution of the metal of the spatula will have a deleterious effect, and especially if this be of iron. It has been ascertained by the intentional addition of both ferrous and ferric phosphates to the acid solution that crystallization is very perceptibly hastened, even to the extent of causing the generation of a considerable amount of heat. The really safe spatula I consider is one of platino-iridium. A good substitute for this can be made by covering a properly shaped steel spatula with a jacket of platinum formed smoothly to the blade, removed for soldering with a high grade gold solder, and then fastened at the open end at the butt of the blade with soft solder. When this jacket is worn out it is easily removed and a new one substituted. I do not think it uncommon practice to dip acid from the bottle with a steel spatula some minutes previous to making the mix of the cement, during which time there would be considerable action of the acid upon the steel. This immersion of the steel is also apt to start crystallization in the mass of the liquid, the bugbear of cement makers. The liquid should be dropped from the bottle, or, better still a

minimeter should be used in a perforated cork, and this minimeter I would advise being kept in a duplicate of the liquid bottle, as, if immersed at all times the tube is liable to be the means of starting crystallization. I would say, remove the cork carefully and stand on its butt end, and if any crystals have formed on the cork or bottle mouth, remove these with some absorbent paper. With the minimeter transfer the required amount of liquid to the slab and return the minimeter and bottle cork to their proper places, having been careful to avoid picking up any foreign particles. I would advise forming a cap of bibulous or filter paper over the cork and neck of the acid bottle. It will take care of any liquid which may exude and will be a convenience in handling the cork. These may seem like trifling instructions, but the proper crystallization of cement depends so much on all conditions being right, that I would feel I had not covered the proper scope of my paper if they were not given. The slab and spatula should also be scrupulously clean, without a trace of the previous mix of cement. Any trace of crystallized cement will hasten the crystallization of the mix in hand.

Caries of the Maxillary Bones, Resulting from Infection through Pulp-Canals of Teeth.

By far the more common immediate cause of caries of the maxillary bones is infectious material passing through the apical foramen from the canals of roots of teeth whose pulps have died or have been destroyed. The infection may at first cause an active inflammation of the peridental membrane and the adjacent tissue. This subsides and a chronic condition in a circumscribed area at first may follow. After this, unless the root or roots be disinfected and perfectly filled, there is present more or less constantly infection in the root-canal, which is communicated to the tissues at the apical end of the root. If the general health is good, the repair of the tissue may about or quite equal the destruction by germ life; but if the general physical equilibrium becomes unbalanced, then the waste becomes more rapid than the repair, and the consequence is destruction of the cellular elements in the bone as well as in the soft parts contiguous. This progresses most rapidly in the more cancellous parts of the bone, and in all directions from the center of infection. Even after the thorough infection of the root or roots causing the condition, there may be no cessation or retardation of the process, as the surrounding dead and infected bone may have all the necessary elements present for the spreading and continuation of the disease. Indeed, there have been cases in which it has progressed until the whole of the superior

maxillary bone has been destroyed, the patient having but slight knowledge of the progress or presence of the disease, other than by a greater or less loosening of the teeth and a discharge through sinuses in the gum, the latter causing it to be mistaken for alveolar abscess.—T. L. GILMER, *Dental Digest*.

Crowns or Fillings?

The principles of crown-work were hardly understood before we began to abuse them to such an extent that it now threatens to demoralize the integrity of the profession much more than it has been damaged by either vulcanite or plastics. The monument of the fall of operative dentistry—gold crowns on the anterior teeth—are certainly becoming more generally used, yet there is no excuse for this practice. If a front tooth is so badly broken down as to require crowning, a porcelain crown is far more artistic; and where gold crowns are used on the anterior teeth to secure anchors for bridge-work, we believe a partial plate would be far preferable.

Dr. F. T. Van Woert, of Brooklyn, recently stated that a great deal of crown- and bridge-work was done simply and solely for the purpose of advertising, and that crown-work had diminished the manipulative ability of many men who formerly used gold, but who were now forced to adopt amalgam.

No one will deny that the judicious use of crowns is a blessing to our patients, but it must not be adopted for the purpose of avoiding difficult operations, nor for the introduction of bridge-work.—W. W. MOORHEAD, *Digest*.

Changing Shape and Appearance of Natural Teeth by Grinding.

My first consideration when a patient presents for examination is—how can I improve the appearance of these most important and expressive features of the face, the teeth and lips? Are the teeth too long? Shorten them with fine stones, polish the surfaces, and round up the corners. Are the teeth too short? Make them longer by removing a crescent-shaped piece of gum at the enamel border. You will find by exploring with a small blunt instrument under the margin that the gum usually overlaps the enamel when the teeth are short. This is particularly true of the upper anterior teeth, centrals, laterals, cuspids and bicuspids, where the effect is desired. By using a drop of 2 per cent. eucain solution over each tooth you can get perfect anesthesia for the removal of this overlapping gum.

Are the teeth fan-shaped, broad, crowded? In this event use a bow-separator, reduce the exaggerated bulging surfaces. This will give the tooth a symmetrical, longer appearance so desirable. It will remove a surface that will often decay, for the very pressure caused by the crowding will soften the enamel, and this very condition is one of the causes for so many hideous gold approximal fillings in the front teeth.

If the teeth are too long, ragged, irregular, or in any way do not conform to correct lines, they should be changed, straightened, the surfaces rounded and carefully polished. It is always a benefit, never detrimental to tooth structure.

Broad teeth in a crowded arch will be greatly improved in appearance by taking off a little on either side, making the tooth narrower, overcoming crowding, preventing decay between and arresting decay if present. I advocate this in every case as a prophylactic measure at any age.

Gold fillings that show in the anterior teeth, where the enamel has been cut away to gain access to a cavity, are annoying to any one of refinement. It should be condemned. There is a better way to do this, and that is to cut in from the lingual and never destroy any enamel in front. If the enamel is thin, line it with cement of proper color before filling with gold or any other material. This applies to bicuspid quite as much as to the front teeth. If the enamel is destroyed in front, so that the gold cannot be hidden, it is a deplorable disfigurement.—E. PAYNE, *Dental Digest*.

Carelessness: A Case in Practice.

In the latter part of October a lady presented for examination, wishing an upper plate, stating that although her teeth had been extracted some seven months previous, yet the gums had not entirely healed; and on examination I found a large swelling on the right side, beginning where the bicuspid had been removed and extending into the roof of the mouth. It was as large as a half-dollar at its base and one-half inch in depth, with a fistula opening near its center. Its size of course interfered with articulation and mastication and prevented the use of a plate,

The diagnosis of the case was "broken roots," and it was decided to remove them.

The tissue was injected with a solution of cocain and two incisions made, crossing each other at the opening of the fistula. With a large fissure bur, I proceeded to cut into the mass. I found the alveolus badly broken down and easily cut. In a short time the bur struck something hard and unyielding. With a sharp chisel and a mallet, I dissected out

a large piece of alveolus, and clinging to it was the small end of one of the beaks of a root forceps, the source of infection. After cutting away the diseased bone, I used peroxid of hydrogen and a 10 per cent. solution of sulphuric acid in washing out the cavity. I then laid the flaps over the wound carefully and closed by two stitches. The wound healed slowly, but in time she was able to wear a plate with satisfaction.

The hemorrhage was easily controlled and did not interfere with the operation. The cocain solution used was 6 grains cocain crystals in one ounce warm distilled water. Comment is unnecessary as to the carelessness of the one who extracted the teeth and left such a dangerous object to become a source of trouble to his patron.—T. A. MAYHEW, in *Western Dental Journal*.

Gold Filling made by Electro-Deposition.

Probably the most mysterious operation to those who are not acquainted with electro-metallurgy would be the making of a filling. I will briefly describe a practical case, and if anyone doubts the truth of the statement, I am ready at any time to show the fillings in a living patient's mouth.

About four months ago, a young woman called at my office with her two superior central incisors badly decayed on both sides, and I was asked to fill them with gold, and I was especially requested that the operation should be painless. She had previously lost the laterals, and the space between the centrals was about a line. The cavities were very sensitive to heat and cold, and I assured her that I could fill them and the operation would be painless.

The first thing I did was to fill the four cavities with soft beeswax, to give them their natural contour; then I took a good plaster impression, and using moldine (potter's clay and glycerine) I packed it in the impression nicely to prevent the fusible metal from running away; then poured in fusible metal, and before it set, stuck in a good sized copper wire; removed, cleansed and over all parts of the metal teeth, where I did not want the metal, I coated with stopping-off varnish; then placed it in gold plating solution and allowed it to remain until the plate was about 28 or 29 g.; then removed it from the bath, cut out the face of the crowns until nothing remained except a little ribbon at the top and bottom. Of course the plate was allowed to cover all the cavities, polishing up beautifully.

The patient called. I excavated the cavities, cleansed them, then cemented those open-face fillings on. The patient was then, and is now, well pleased. No shocks. Comfortable.

Some may think that this was a long and tedious operation. It was not. I did not mind it half as much as if I had filled them by the old method.—L. B. WILSON, *Items*.

Gold Plate and Solder.

We use tin constantly in filling, either by itself or in combination with gold, and I think that none of us would overlook this source of danger in making plate or solder, but I think we have not thought of the tin in amalgam; a very small part, even that in an amalgam repair of a gold filling, might ruin the working of plate or solder. I direct my maker to treat all my gold with corrosive sublimate for the removal sublimate of tin. The pennyweight is taken as a starting-point and divided into this formula:

		Gold.	Silver.	Copper.	Zinc.
Plate	-	18 gr.	5 gr.	1 gr.	0 = 24 gr.
Solder	-	18 gr.	3½ gr.	1 gr.	2 gr. = 24½ gr.

You see by this that a portion of the silver is withheld and zinc added to make the melting-point of the solder lower than that of the plate, and that there can be but slight difference in color between [them. The slight quantity of copper helps to toughen the solder, and deepens the color of the plate; a lighter-colored plate and a very free flowing solder are made by omitting the copper and adding an equal amount of silver. But the underlying rule of pure metals, and lowering the melting-point of the solder by withholding part of one metal and adding an equal part of another of the same color, but of a low melting-point, such as zinc, will allow us to make a plate and solder of any carat that will work well together.—H. C. MERIAM, *International*.

A Hint in Orthodontia.

It sometimes happens that the second bicuspids are lost before the second permanent molars have erupted, and if neglected the latter would travel forward. It is frequently desirable to retain loose deciduous cuspids for some time, lest the bicuspids move too rapidly to the front, and narrow the space for the forthcoming cuspid. In all cases where these teeth are lost it is advisable to insert a vulcanite plate, with thin piano-wire retainers, pressing gently against the obtrusive tooth. The vulcanite might occupy the space of the lost tooth, and should be cut away from time to time to accommodate the erupting tooth. Many an

unsightly irregularity can in this simple way be prevented. A treatise might be written on the mechanical prevention of extreme irregularities. Some of the most interesting and successful cases in our practice were begun before the roots of the teeth which were moved were fully completed. In fact, the success of several noted cases was only made possible because the regulating was begun as early as the ninth year.—*Dominion Dental Journal.*

Modelling.

In order to overcome atmospheric resistance, adopt the following method: Having prepared the softened composition in the tray in the usual way, take a sharp knife and cut deep notches at regular intervals through the substance of the material, with this result, that instead of having one broad surface to bring in contact with the mouth, the one surface is divided into a great many small surfaces, so that in taking the model the confined air readily finds an escape through the crevices which at first exist, between the many surfaces caused by the notching process, but which are completely obliterated when the model is complete.

The next cause of failure is atmospheric pressure or suction; on withdrawing the soft and sensitive composition from the mouth there is always a certain amount of suction, which, acting upon the sensitive surface of the compo., more or less draws and warps it. This is corrected in the following way: After removal of the model from the mouth place it in cold water and harden throughout, then place the same in boiling water for a few seconds, so as to soften the thin surface of the compo. only. Replace the same in the mouth, pressing home firmly, and cooling with the syringe. The surface warping which may have occurred at the first taking of the impression, will thereby be corrected. This same treatment will also overcome the difficulty relating to undercuts or dragging.—*The Molar.*

To Repair Old Amalgam Plugs.

Amalgam when added to an old plug forms a perfect union by the mercury entering into the old material. It so happens that still another patch may be needed. An observer will remember that in after years seams appear and the fillings seem to be separating; in fact, do separate in some cases, the cause being that the joint contains more mercury than other portions of the plug. The first portion absorbs mercury, which changes its proportion at the joint, and that thin strata becomes a positive element between the other elements more negative. To correct such

effects, place a layer or two of gold-foil against the amalgam wall and introduce the filling. The gold disappears, but the influence remains, and the joint will be the last to give way, because the gold renders the joint negative. Lining cavities with tin under amalgam is good practice and next to cement. It presents an amalgam largely composed of tin, which, like tin, arrests caries and also blends the elements in the alloy which always exists in amalgam, that is, caused by the cuttings that are not fully amalgamated, with the other portions containing more mercury. —S. B. PALMER, *International*.

An Exact Method for Measuring Rubber.

Take a common glass tumbler and a piece of wood long enough to reach across the top. In one side or edge of the wood drive a small wire nail, allowing the head to protrude about one-half inch.

Remove the wax from the investment and roll it in a ball. Insert the point of an instrument in the wax and place it in the tumbler. Lay the piece of wood across the tumbler, the nail down. Pour water in the glass until the surface touches the head of the nail. Remove the wax from the water and replace it with rubber until the surface of the water touches the nail, and the exact quantity of rubber required will be in the tumbler. —W. H. CRAIG, in *Pac. Med. Den. Gaz.*

A Positive Method of Root Treatment.

Dr. D. D. Smith treating this subject in the *International Dental Journal* says :

Our treatment being almost without exception the same, in all cases of helpless roots, we shall not classify the different conditions found, which are familiar to all.

Unless the tooth is so sore as that to work on it would produce great discomfort, we at once adjust the dam if possible. This is very important, as it leaves us the free use of both hands, with no danger from the saliva. We then open up the pulp-chamber so that we can get directly at the roots; not one, but all. This sometimes necessitates the removal of a large portion of the crown, but we had much rather lose three-fourths of the crown than save nine-tenths and have it in such a condition that our patient dare not bite on it; for in the former case we can supply the crown, but we cannot supply the lack caused by not being able to get at pulp-canals directly.

Next, remove everything you possibly can from the roots, going to

the extreme end if you can get there. We have been two hours getting there sometimes. It is not our practice to enlarge the canal, except sufficiently to get a good entrance. Unless the root is extremely foul we rarely use an antiseptic until we have the root mechanically cleansed. After removing all *debris* possible, if there is a discharge of pus or moisture, we very patiently absorb it with paper wound around broaches, removing each piece after using. If we can now get the root dry (kindly note the provision), we expect to fill it permanently at that sitting, no matter what the previous condition, provided it is not too sore to work upon. If the root is causing pain, we open it freely to give relief, and defer the operation to a subsequent sitting.

Having dried the root and, if possible, passed our fine broach through it, we now insist that a messenger shall go up through the end and throttle those little fellows who are up there determined to make trouble. For upward of three years our sheet-anchor was chloride of zinc, ten per cent. solution, followed with this root-filling; gutta-percha dissolved in chloroform to the consistency of cream, in which a liberal supply of iodoform powder is mixed. We think the exact quantity not material, but should use probably one drachm to one ounce of gutta-percha solution. Since iodoform is not perfectly soluble in chloroform, we stir the mixture before using. Although the zinc chloride can be depended on to do the work effectually, we found it unnecessarily severe, and for seven years we have used carbolic acid instead.

To get our carbolic acid where we want it, we often place a drop in the root, then place a piece of softened gutta-percha in the cavity, and with a burnisher force it into the root.

When we are satisfied that our carbolic acid has gone where we want it, we dry the root as thoroughly as we can, after which we pump our gutta-percha solution into it, following with shreds of bibulous paper dipped in the solution and packed as thoroughly in the root as we know how. If the root-canal is so small that we are unable to carry these shreds of paper, we, after pumping the mixture in the root with a fine broach, carry a piece of eighteen-carat gold wire as far up as we can. We have some of this wire, about three-one-thousandths of an inch in diameter.

It is our custom, after treating and filling a root, to say to the patient that they will have some quite severe pain for a few hours following the treatment. Quite often this prediction is not fulfilled, in which case they are agreeably disappointed; if it is, they are not frightened, and bear it until it subsides.

Defective Teeth and Swellings of the Lymphatic Glands.

Dr. H. K. Halle has tried to prove clinically that "dead teeth" as well as "living" defective teeth, may cause swellings of the lymphatic glands. He has examined about four hundred children; a far greater number than any of the earlier fellow-workers has reached. To avoid the mistakes made in any of the earlier statistical researches, the author has prepared statistical tables, which exactly indicate how many milk teeth and remaining teeth every child had, how many teeth had recently been taken out; also, the spot of defect in every bad tooth and the degree of it. The condition of the gum of every child, as well as those local or general illnesses which cause swelling of the glands were likewise taken into consideration, in order to exclude such cases in the estimation of swellings of the glands caused by illnesses of the teeth.

The author after closely studying the source of every single gland, was quite convinced that the upper teeth have no connection with the submaxillary glands, because the lymphatic vessels appertaining to them empty themselves into glands which are externally not perceptible, and he has arranged two different tables. To the first belong the teeth of both jaws, in order to compare the results with those of former researches; to the second—the more correct one—belong the dead teeth and those having an injured pulp of the lower jaw, whilst the teeth in the same condition in the upper jaw are not taken into account. A third table only enumerates the cases of swellings of the glands in proportion to teeth with an affected pulp.

The children are divided into three groups, the first group comprising three hundred and nineteen children who have no swelling of glands at all; two hundred and thirty-six—seventy-four per cent—had no bad teeth which might have caused any swelling of the glands; eighty—twenty-six per cent—had such bad teeth. The second group comprised children who had swellings of the glands in different degrees, but there were no other causes besides bad teeth, consequently these children cannot be counted in statistics. Three thousand one hundred and sixty-one children are left for the third group who had swellings of the submaxillary glands in different degrees, for which no other causes could be found except those arising from bad teeth. At the tabular total of this third group, the proportions of the numbers were as follows:

Among three thousand one hundred and sixty-one children with swellings of the glands were two thousand three hundred and thirty-four, or seventy-eight and eight-tenths per cent, who had bad teeth of the third or fourth degree in the lower jaw. With one thousand six hundred and forty-six, or seventy per cent. of these children, the bad teeth, with re-

gard to their position, intensity of illness, etc., corresponded exactly to the position and the degree of the swelling of the glands: with six hundred and eighty-eight, or twenty-nine and five-tenths per cent, the bad teeth and glands did not agree, or partly only. The third table proves that more than half of all the teeth made responsible for any swelling of the glands, had still a living pulp. The author states the summary of the result of his work in the following sentences:

1. Bad teeth, carious ones especially, play an important part as etiological factors in swellings of those lymphatic glands, in the regions of which the teeth are situated.

2. As long as the caries is limited to the enamel and dentine of the tooth, without influencing the pulp, there is no swelling of the gland to be feared.

3. If the pulp is deprived of its epithelial protection, which consists of the enamel and dentine of the tooth, there is the possibility of a swelling of the lymphatic gland through the medium of infectious or otherwise injurious matter.

4. Not only dead teeth with open cavity and root canals must be considered the entrance way for infectious matter, but also the teeth, the pulp of which is still alive, if exposed to the injurious influence of outer contact.

5. There are no lymphatic capillaries and no lymphatic vessels existing in the pulp, and yet the pulp possesses the capability of absorption.

—G. RANDORF, *Items*.

The Use of Watchmaker's Eyeglass in Dentistry.

In an article on this subject in *Items*, Dr. S. J. Spense says:

On dark days, and when the shades of night are beginning to fall, and when the eye has become fatigued by being focused long on one small spot, and when you want to see more clearly what you are doing in an obscure posterior cavity, and when you are drilling retaining points, and when you are malleting the last pieces of gold along the margin of a cavity, how good and pleasant it is to be able to place one of these little instruments to your eye and see things clearly!

It must be admitted that it is not altogether pleasant to a novice to hold his glass at his eye for any considerable length of time. It requires some experience to do this without conscious effort. For such cases, there are glasses made with a spring attachment to go around the back of the head. But my experience with such assistance has been that it interferes somewhat with one's pointing the eyeglass just where one desires.

A more serious difficulty is, that the focus of the watchmaker's eye-

glass is such as brings the dentist's face a little too close to that of the patient. But this can be remedied, and at the same time a somewhat enlarged magnifying effect obtained, by removing the lens from the frame (which is easily done after heating the vulcanite) and extending the frame outward about an inch and a half by adding to it a cylinder of aluminum, attaching the lens to the distant end of this tube and telescoping the nearer end into the vulcanite frame.

Watchmakers say that the eye that is used with the eyeglass is stronger than the other.

HIGH POWER LENSES.

There is another eyeglass used by watchmakers which is almost as useful in dentistry as that which we have been considering. I refer now to one of the lens which is only about three-eighths of an inch in diameter, and the magnifying power about four times greater than that of the other. This one cannot be used by dentists at the eye, because its focal point is only three-fourths of an inch from the lens, but, of course, the eye can be placed at almost any distance from the glass, and thus the instrument can be used even when thrust far into the oral chamber.

I employ this higher power extensively in detecting those very small approximal cavities which cannot by the naked eye be distinguished from discolorations, and also for examining the margins of cavities before and after filling; for examining a suspicious sulcus; for detecting cracks in enamel, etc. By this means one can see whether his approximal gold filling is sufficiently dressed down, and whether there is a flaw at its gingival margin. With the electric mouth lamp on the inside, and this little lens on the outside, you can see right through an otherwise obscure approximal space, detecting an incipient decay or the slightest defect in a filling.

As the attempt to focus this eyeglass on a posterior molar meets with difficulty, because the vulcanite frame and the operator's finger tend to throw the tooth into the shade therefore the greater portion of the vulcanite frame should be sawed away, leaving only a narrow ring of vulcanite to encircle the lens. To this ring should be attached a handle, which should be inclined to the major axis of the lens about forty-five degrees, or, preferably, be made adjustable.

These watchmaker's glasses are also very helpful while grinding the joints of gum teeth. Altogether I have found their use one of the biggest little things in dentistry.

BRIEFS.

Soak It.—To cut an old model easily, soak in water a few minutes, when it may be easily trimmed.—*Weekly Dentist.*

Lanoform.—This is described (*Giornale di sarmacia di Trieste; & Gazzetta medica lombarda*), as lanolin mixed with one per cent. of formaldehyde. It is used as an antiseptic.

A Disk that Cuts Quicker than a Diamond Disk.—A small disk of thin copper used with water or oil will cut as perfectly as a diamond disk, and even more quickly.—*Dr. Roberts, International.*

A High Standard.—We want as high a standard as is right. Personally I believe that the logical place for beginning the education in dentistry is at the close of the High School course.—*E. C. Kirk, Items.*

Vapocaine.—I have used a great many obtundents for sensitive dentin, but none I have used has given me such entire satisfaction as vapocaine; and I think it will prove very useful.—*W. W. Walker, Cosmos.*

Listerine.—As a *prophylactic* in epidemics of scarlatina, diphtheria and relapsing fevers, I have accomplished the highest results with Listerine, using it internally, externally and by hypodermic injection.—*Dr. G. S. Hill.*

Always Apply the Rubber-Dam.—I would strongly advise in all cases of capping, root treatment or filling, to apply, if possible, the rubber-dam, as you can work with greater comfort, ease and cleanliness.—*Dental Record.*

Remove all Tartar Before Taking an Impression.—This is a point which is very likely to be overlooked by the careless, and the frequent result of this negligence is that a plate has to be remade.—*R. Manning, Dental Record.*

The Dentist Should be Thoroughly Acquainted with all Simple Remedies and treatments with which he may be called upon to administer on short notice, as in cases of fainting, collapse, shock, hemorrhage, etc.—*F. E. Wallace, Digest.*

Removing Impressions.—How to remove a plaster impression that sticks? Take your air syringe, draw water into it, raise the lip, flood water around the top of the impression, and you will be able to remove it with ease.—*J. W. Blair, in Brief.*

Why Absorption Fails.—Whenever the permanent tooth in its progress fails to involve the foramen, no absorption takes place, and unless the temporary tooth is removed its eruption is retarded or takes place out of the true line of the arch.—*J. S. Bagnell, Dental Century.*

Principal Fault in Gum Sections.—In my opinion the principal fault in gum sections lies in the fact that it is next to impossible to get them to conform to the contour of the alveolar ridges with any degree of precision, unless one has an immense number to select from.—*H. Rose, International.*

Karolit is the Name Given to a Special Prepared Vulcanizable Gutta-Percha.—It is treated and used the same as rubber; the finished plate being light, very elastic, and can be highly polished. It does not absorb liquids from the mouth and will not become porous.—*Die Zahnkunst.*

To Prevent Odors of Medicine Arising in the Office, the very thought of which often sickens people—young and old—against a second dental visit. Keep bottles containing oil of cloves, carbolic acid, local anesthetics or other objectionable drugs, on a plate glass slab, and over each bottle invert a wine tumbler.—*Items.*

Not Insulting.—A clean cuspidor never insulted a patient; so keep it clean. If you have no fountain spittoon, you can wash the one you have *after each patient.* Sweeten it by washing it. Water does purify and sweeten. It will sweeten and clean the spittoon as well as your hands if you will *only try it.*—*Dr. Love, Texas Journal.*

Antisepsis.—Remember that there are very few patients now-a-days who do not know something of the advantages of antiseptics, and of the dangers that they run from having unclean instruments used on them. Attention to such details frequently makes all the difference as to whether a man is successful or not.—*E. P. Collett, Brit. Jour.*

To Remove Plaster from the Hands.—In removing plaster from the hands after the application of plaster casts, it would be well to remember the fact that syrup of lime in the strongest solution, and that the application of a little sugar to the hands will greatly assist you. The same rule applies to the removal of casts.—*Ga. Jour. of Med. and Sur.*

First Meeting with Patients.—It is an important and laudable object to remove the dread of the patients and secure their confidence. This can best be done by the selection of the simplest cavities for first operations. To cause great pain to patients is inexcusable and does not

tend to the preservation of the greatest number of teeth.—*H. W. Harvey, The Dental Journal.*

Barrels of Plaster.—By a purchase of a half barrel of plaster lately, I am reminded there is quite a difference in this material, not only in quality, but quantity. Being surprised at the smallness of my half barrel, I made inquiry and find some dealers' half barrel weighs 150 pounds, and others only 120 pounds. This is worth knowing.—*S. C. Slade, Ind. Dental Journal.*

Spacing Artificial Teeth to Give a Natural Appearance.—In the bicuspid region where there is difficulty in getting teeth to articulate properly, it is often a great assistance to leave out a bicuspid, often the first bicuspid in the upper, and this may leave a space say, half a tooth in width, at the distal side of the canines, which looks very natural.—*E. J. Ladmore, Jour. B. D. A.*

Applying Antiseptics to Root Canals.—In working antiseptics into the canals I use a method which I first knew to be used a good many years ago by our friend Dr. James G. Palmer; it is by using a jewellers four-sided broach, and twisting a fibre of cotton on it to use as a piston, to pump the antiseptics to the end of the root, forcing them through the apical foramen.—*Dr. Watkins, International.*

Tube Teeth Useful as Molars and Bicuspids.—Many of us will say that tube teeth have gone out, and that may be true so far as the front teeth are concerned, but for molars and bicuspids they are still very useful when front teeth are soldered to the plate, and this simplifies repairs and additions which become troublesome when the back teeth are put on with vulcanite.—*E. J. Ladmore, Jour. Brit. Asso.*

Do Not Crown Teeth that Can be Filled.—There are very grave reasons, apart from the financial aspect of the question, why crowns should be reserved for those hopelessly decayed teeth which it is impossible to properly fill, but that teeth, which can be filled should be filled, the risk of breakage being minimized by freely cutting away weak portions, or by shaping the filling so as to protect and support them.—*Dental Record.*

Gold Matrix Best for Inlay Work.—There is no danger at all of melting the gold matrix which is used, because it is impossible to get platinum thin enough, and, besides, the platinum cannot be adapted so closely to the margins of the cavity. The cement might perhaps wash out to a depth of a hundredth of an inch, which is practically nothing. The proper thickness of gold to use is No. 30 or No. 40.—*Dr. Deems, International.*

Quickly Made Regulating Plate.—A quick method of making a small plate, so often used in regulating teeth, is to take an impression in impression compound, chill in ice water, remove from tray, cut from same a plate just the size wanted, chill and dry, then press in moldine. Remove and pour Melott's fusible metal, press on the metal with napkin, thus forcing metal in every part. Finish same as vulcanite plate.—*Dental Headlight.*

Use Oil of Cloves Previous to Devitalization.—The use of oil of cloves is indicated in the treatment of teeth previous to their devitalization. If a patient comes to you with an exposed and inflamed pulp which you wish to destroy, first wash out the cavity, seal it lightly over an oil dressing, and at the end of twenty-four hours you will find inflammation has subsided and the pulp is ready for your devitalizing agent.—*S. B. Lewis, Ind. D. Jour.*

Punctuality is a habit which can never be acquired too early in life. A man who is punctual in attending to his appointments, will get through his day's work with greater ease and satisfaction to himself and patients than one who places no value on time and who thinks that it does not matter whether he keeps his appointments within a few minutes of the time fixed, or whether his patients are kept waiting half an hour or so.—*E. P. Collett, Brit. Jour.*

State Boards of License.—Let us do away with State Examining Boards, and call them State Boards of License. Let them give a man a license to practice. Now what shall be the basis upon which a man shall demand such a license? Let him present to the Board a diploma from a properly chartered college, submitting with that diploma the original examination papers upon which that college granted him his diploma. The result would be justice to the student.—*R. Ottolengui, Items.*

Natural Tooth Tips.—In cases where restoration with natural tooth substance is desirable, a solid and firm anchorage can be made by cutting a dovetail in tip and also in tooth and filling with gold. If a large approximal restoration an iridio platinum pin can be run from tip into cervical body of tooth, and if a small corner, transversely into body of tooth parallel with the cutting edge. The tip should be placed in formalin bath for several days before placing.—*B. K. Belden, Pac. M.-D. Gaz.*

Orthoform in Toothache.—Dr. Hildebrandt asserts that orthoform causes to cease completely the violent pain due to inflammation of the pulp of a decayed tooth. To this end it is sufficient to introduce into

the cavity of the tooth a plug of cotton steeped in an alcoholic solution of orthoform. The pain instantly disappears, and for a considerable time. Being absolutely deprived of any toxic properties, orthoform constitutes in such cases a simple remedy, and one which the patient can apply himself without danger.—*Medical Press.*

Filling Root Canals.—Left upper molar. Tooth previously prepared; root canals opened, thoroughly dried, and antisepticized; flooded with beech wood creosote, wiped out and dried with Evans' root cavity drier; specula of plain, yellow beeswax introduced into each canal melted to place with the root cavity drier, then introduced, while wax was warm, specula of aluminum calculated to nearly fill the cavity, condensing same into pulp chamber ready for the introduction of cement as a base to complete permanent filling.—*Dental Headlight*

To Avoid Recurrence of Decay.—The broader we make our metal surface at the expense of the enamel-surface, the more certain we are to avoid a recurrence of decay, and yet this does not imply that we must ruthlessly or ill-advisedly carve away sound enamel for the purpose of making a broad metallic area. It simply implies that we shall not stop short of reaching perfectly sound enamel in the extension of these cavities, and that particularly in positions suitable for the lodgment of micro-organisms we shall be especially thorough.—*Dr. C. N. Johnson, Cosmos.*

To Remove Impression for Inlay Work.—The best way to remove the impression from from a cavity is gradually to coax it with a very fine instrument, inserted beneath the edge, and it will suddenly jump out of itself without being altered in shape. Another essential is perfect cleanliness in handling the material; to secure this the slab upon which the material is mixed should be covered all the time, as the least dust will very likely rise through the body and make a bubble on the surface of the inlay. The fusion of the body must be accomplished slowly.—*Dr. Deems, International.*

Method of Repairing Broken Facings in Bridge-Work.—First drill through the backing for the pins of the new facing, cutting out the gold between, countersinking the backing on the palatal surface, forcing the pins apart and into the countersink by a pair of curved pliers, one jaw of which is fitted with a swivelled socket to receive a pellet of lead or shot to protect the facing, the other having a grooved and swivelled socket, wedge-shaped, to force the pins apart and into the countersink, while that part between the pins may be filled with a fine alloy from which the excess of mercury has been carefully expressed.—*G. F. Harwood, International.*

Phosphorus Necrosis.—The part which the phosphorus plays in the process is not far to seek. The acid fumes (phosphorus and phosphoric acids) produced by its oxidation in the air, have no effect on bone covered by gum or mucous membrane; but when they can penetrate to the bone directly through the aperture left by a decayed or extracted tooth or any injury, they erode the bone, weaken its nutrition and resisting power at this small spot, and make it susceptible to infection by tubercle bacilli. The bacilli, having made good their foothold, spread slowly in some cases and with disastrous rapidity in others.—*R. Stockman, Brit. Med. Journal.*

Banding a Logan Crown.—After the root is prepared as usual the band is made very narrow and entirely under the free margin of the gum. A cap is then soldered on the edges, extending beyond the band in all directions the same as for porcelain face crown. The Logan crown is next ground and fitted to root, the gingival margin of crown is then ground to receive a very narrow band, which is ground to fit the first band, while in position on the root, the crown is removed with bands in position, united with hard wax, removed from crown, wire together and solder over Bunsen burner when finished. Cement band to crown before putting on root.—*Dental Headlight.*

Formagen as a Pulp Capping Material.—Formagen consists of a powder—principally calcium carbonate (which apparently acts merely as a medium)—and a liquid—carbolic acid and eugenol—each saturated, it is claimed, with formaldehyde vapor, which is gradually given off again when the two are mixed together. The method of applying formagen merits discussion. Remove all carious tissue over the pulp, where possible without excessive pain. I have then placed the cement in the hollow of a gold cylinder, flattened out and made concave, and applied it thus, covering with oxyphosphate to avoid pressure in subsequent filling, which has usually been permanent.—*H. F. Brooks, Jour. Brit. D. Assn.*

Timely Suggestions —Never be satisfied with a poor model, it will lead you into countless difficulties; never be sure of your bite until the patient has worn the case a week; never try to match teeth on a foggy day or by artificial light; never be cast down by a patient's history of a troublesome plate, for very often the tightening of a band, or a touch with a file or scraper may turn night into day and sorrow into joy; never ease a plate where a patient tells you to, without first looking for yourself and finding the spot; never be content with shoddy work, and your time in the appliance room will be a time of happiness

instead of a time of misery, and the mouth of each and every patient who comes under your care will be a thing of beauty and, consequently, a joy for ever.—*R. Manning, Dental Record.*

How to Keep Hypodermic Needles from Rusting.—We have known for years that, in sterilizing our instruments, the cheapest, simplest, and best way is to boil them with a little washing soda, say one per cent. Now, it occurred to me that we might be equally fortunate in keeping our needles in cold water if it were saturated with washing soda. I put some needles in such a solution,—ordinary washing soda in water,—and these are the same needles. I took a knife and carefully scraped off the plating of one of them; the other has the ordinary plating, and you can see that they are as silvery and bright as the day I put them in, more than a year ago. I think I can claim that the method is a success. It might be a convenience, also, for dentists, as a means of preserving their smaller implements free from rust.—*Dr. Dawbarn, International.*

To Determine the Centre of the Mouth.—In arranging the teeth on the model the centre must first be determined, and the median line of the lips should first be observed. But this is not all, because in nature we rarely see absolute regularity, and in studying faces we find that the nose is not always in the centre but often inclined to one side or the other. The eyes, again, are not always in the same horizontal line, and the mouth is not always straight across the face; so in determining the median line on which to pitch the central incisors, we must take an average centre of all the features concerned, and even in cases where the natural teeth in the lower are still retained, but out of centre, they should be regarded as only one of the features to be observed in determining the median line for the upper dentine.—*E. J. Ladmore, Jour. B. D. A.*

SOCIETIES.

Northern Ohio Dental Association.

THE Fortieth Annual Meeting of this Association will be held in Cleveland, (Colonial Hotel,) May 16th, 17th and 18th, 1899, beginning at 10 o'clock a. m., sharp, Tuesday, May 16.

PROGRAM.

1. President's Address—Dr. L. P. Bethel, Kent.
2. The Dentist in His Office—Dr. N. B. Acheson, Youngs

town. Discussion opened by Drs. H. F. Harvey, Cleveland; Frank Creager, Fremont.

3. Report of Committee on President's Address—General Discussion.

4. The World and Its Teeth. (Illustrated with Stereopticon).—Dr. W. H. Whitslar, Cleveland. Discussion opened by Drs. J. R. Callahan, Cincinnati; C. R. Butler, Cleveland.

5. Poem: "Oh, Give Us Back Our Tails."—Dr. J. F. Siddall, Oberlin.

6. A Symposium—Six short papers on the most interesting case in practice during the last two years. Denture with Almost an Entire Upper Lip Made and Attached—Dr. F. S. Whitslar, Youngstown. An Unerupted Cuspid—Dr. C. T. King, New London. Subject to be announced—Dr. J. F. Dougherty, Canton. Subject to be announced—Dr. J. G. Templeton, Pittsburg. A Case in Oral Surgery—Dr. D. E. Kelley, Ashtabula. Subject to be announced—Dr. F. L. Warren, Painesville. General Discussion.

7. Preparation of Proximal Cavities in Bi-cuspids and Molars (Demonstrated by models)—Dr. J. K. Douglas, Sandusky. Discussion opened by Drs. W. H. Merritt, Norwalk; D. A. Allen Toledo.

8. Revision of Constitution and By-Laws.

9. Some Considerations Pertaining to the Filling of Teeth—Dr. F. W. Knowlton, Akron. Discussion opened by Drs. Neil H. Bishop, Andover; Wm. T. Binzley, Napoleon.

10. The Use of X-Rays in Dentistry—Dr. W. A. Price, Cleveland. (Dr. Price will demonstrate his paper by using an X-Ray apparatus.) Discussion opened by Drs. W. H. Hersh, Piqua; L. E. Custer, Dayton.

11. Voluntary Papers. General Discussion.

CLINICS.

Clinics will be given in the Dental College of Western Reserve University.

1. Symposium on Napkinning—Dr. C. R. Butler, Cleveland; Dr. A. Terry, Norwalk; Dr. J. W. Lyder, Akron; Dr. E. J. Waye, Sandusky; Dr. H. Barnes, Cleveland; Dr. J. E. Robinson, Cleveland.

2. Symposium on the Extraction of the Lower Teeth—Dr. W. H. Fowler, Painesville; Dr. W. G. Ebersole, Cleveland;

Dr. W. B. Connor, Akron ; Dr. F. H. Waldron, Canal Dover ;
Dr. L. W. Ballard, Alliance ; Dr. G. H. Wilson, Cleveland.

3. Cohesive Tinfoil Filling—Dr. H. L. Ambler, Cleveland.
4. Tin Demonstration—Dr. Corydon Palmer, Warren.
5. The Use of Incandescent Lamps to Control Dental Electrical Apparatus—Dr. W. H. Hersh, Piqua.
6. Clinic—Dr. L. E. Custer, Dayton.
7. Use of Sulfuric Acid in Canal Preparation—Dr. J. R. Callahan, Cincinnati.
8. Clinic—Dr. Hugh B. Mitchell, Canton.
9. Making Case-Richmond Crowns. Practical Cases—Dr. J. F. Stephan, Cleveland.
10. Gold Plating—Dr. W. H. Hayden, Youngstown.
11. The Process of Tipping Teeth by the Use of Solid Cusps—Dr. Everett M. Cook, Toledo.
12. Upper Plate (continuous gum), will use the Custer electric oven—Dr. W. T. Jackman, Cleveland.
13. Voluntary Clinics.

American Medical Association.

THE next meeting of the American Medical Association will be held in Columbus, Ohio, June 6th to 9th, 1899.

The Section on Stomatology will be of unusual interest, since its programme will be unlike any ever presented at any other dental society meeting. It will be made up mostly, if not entirely, of original papers, although the papers presented before this section have always been of high order. Papers upon the manipulation and technique of operations and mechanical dentistry are never read at these meetings. Only such subjects as are of interest to the dental and medical professions are received. These papers have always been selected by the secretary with the greatest care. There is no business to transact in the section. Everything in this matter is referred to the business committee (composed of the last three retired chairmen of sections) which meets every afternoon at 5 p. m. to consider the welfare of the whole Association and of each section. These matters are discussed and if favorably considered, they are reported favorable to the general meeting. This method relieves the sections and general meetings

of considerable routine and unnecessary work and also gives more time to do the regular business.

On Tuesday afternoon a committee of three is appointed in each section to nominate officers, a chairman and secretary for the following year. The committee reports Wednesday at which time the candidates are elected. Since the offices of chairman and secretary carry no great honor, there is very little desire on the part of the members for the position, hence politics never mar the session.

With the exception of a few years, the present secretary has been in office continuously since the section was established eighteen years ago. There are many advantages in having a permanent secretary, since a new chairman is elected nearly every year, a permanent secretary is familiar with the methods of conducting the section and knows just whom to call on for papers, no matter in what particular part of the country the association may meet. The character of the papers are always under his supervision. With his general knowledge of the workings of the general meetings as well as the section, if he is interested, the work goes on without friction.

The meetings of the Section on Stomatology are never largely attended, principally for the reason that there are no attractions except the advancement of dental science. The smallest attendance at any one session of a meeting was twelve, the largest ninety six, with an average of twenty-eight.

The members of the Section on Stomatology have never encouraged or desired numbers. They have always felt that even ten or twelve, who were good thinkers and talkers and of sufficient intelligence to discuss the various papers presented, was much more to be desired than a large number of uninterested people.

Dentists are admitted in the same manner as physicians. Dentists holding the D. D. S. degree, upon presenting credentials from their state or local society and the payment of five dollars, can become a member of the association which also entitles them to the journal of the association for the coming year.

Any one who wishes to attend the sessions of the Section of Stomatology is permitted to do so.

The following list is the preliminary program of the meeting to date:

Chairman's Address—Dr. G. V. I. Brown, Milwaukee.

Actinomyces—Dr. Ludwig Hektoen, Chicago.

Evolution of Decay. (Further experiments).—Dr. A. C. Hart, San Francisco.

Cocain and Eucaïn. Their Relative Toxicity. (The results of original investigation and experimentation upon human, as well as animals).—Dr. A. H. Peck, Chicago.

Epithelial Structures in the Peridental Membrane. (Original investigation).—Dr. Frederick Noyes, Chicago.

Infectious Ulcerative Stomatitis—Dr. John Marshall, Chicago.

Oral Surgical Operation, (with illustrations showing remarkable results).—Dr. G. V. I. Brown, Milwaukee.

Some Points on the Etiology, Pathology and Treatment of Persistent Pyorrhœa Alveolaris—Dr. G. T. Carpenter, Chicago.

Interstitial Gingivitis (so-called Pyorrhœa Alveolaris). Giving the result of original work with large photographic illustrations showing the progress of the disease from beginning to the exfoliation of the teeth.—Dr. Eugene S. Talbot, Chicago.

Syphilitic Infection from Dental Instruments with Cases—Dr. W. L. Baum, Chicago.

Professional Education and Ethics—Dr. A. E. Baldwin, Chicago.

A revised and complete program will appear in the May number.

G. V. I. BROWN, *Chairman*.

EUGENE S. TALBOT, *Secretary*.

Vermont State Board of Dental Examiners.

A MEETING of the Vermont State Board of Dental Examiners will be held in Montpelier, Wednesday, May 17th, 1899, at 2:30 P. M., at Pavilion Hotel.

Candidates must come prepared with rubber dam, gold and instruments, to demonstrate their skill in operative dentistry.

The theoretic examination will include anatomy, physiology, histology, chemistry, pathology, materia medica, operative and prosthetic dentistry.

Notice of intention of taking the examination must be filed with the secretary of the board before May 10th.

GEO. F. CHENEY, *Secretary*.

St. Johnsbury, Vt.

Eastern Indiana Dental Society.

THE next meeting of this society will be held at Marion, Ind., May 3rd and 4th, 1899.

N. W. HIATT, *President*.

FRED. R. HENSHAM, *Secretary*.

Ohio State Board of Dental Examiners.

THE next meeting of the Board of Examiners of the State of Ohio, will be held in Columbus, O., Wednesday, May 31st, 1899. All persons desiring to take the examination must make application to the Secretary before May 20th. Address

L. P. BETHEL, *Secretary*,
Kent, Ohio.

Southwestern Michigan Dental Society.

THE meeting of the Southwestern Michigan Dental Society, will be held in Cassopolis, April 11th and 12th, 1899.

C. E. BURDEFIELD, *Secretary*.

OUR AFTERMATH.

EDITORIAL CHANGE.—With the March issue of the *Dental Brief* Dr. T. B. Welch retired from the editorial chair. He will be succeeded by Dr. Wilber F. Litch.

DR. C. E. ESTERLY'S RESIDENCE BURNED.—Dr. Esterly's many friends will regret to learn of the total loss, by fire, of his residence in Lawrence, Kan., on February 9th.

DIED.—Mrs. Brophy, wife of Dr. T. W. Brophy, died at their home in Chicago, February 6th, 1899. We extend our heart-felt sympathy to the doctor in his bereavement.

SELF-EXAMINATIONS FOR MEDICAL STUDENTS, with the proper references to standard works in which the correct replies will be found. 2nd edition, enlarged; pp. 189. Philadelphia, P. Blakiston, Son & Co., 1899. Price 10 cts.

A neat vest-pocket book, containing 3,000 questions on all the branches of medicine and surgery.

RECEPTION TENDERED PRESIDENT BURKHART.—The Fifth District Dental Society of New York tendered a reception and banquet to Dr. H. J. Burkhardt, President of the National Dental Association, at Buffalo, January 28th, 1899.

Prof. John I. Hart, of New York, addressed the society on "A Plea for the Maintenance of High Preliminary Educational Requirements."

ATTEMPT TO TAX DENTISTS.—The House of Delegates of St. Louis has been endeavoring to enact an ordinance taxing dentists and midwives ten dollars per annum for the privilege of practicing their respective vocations. The St. Louis Dental Society objected to be being classed with midwives and the like, and appointed a committee, consisting of Drs. Walter M. Bartlett, J. H. Kennerly and H. J. McKellops, to defeat aforesaid legislation. Aided by an attorney, and by persistent effort on the part of the committee, the bill was tabled indefinitely at a recent meeting of the House of delegates, and the committee report no further action will be taken by this *learned body* (?) of law-makes.—*Cor. Western Dental Journal.*

AFTER DIPLOMA MILLS.—F. A. Stocks, of Marshall County, at the request of the State Board of Dentistry, introduced two bills in the Senate this morning. One annuls the charter of the Kansas City College of Dental Surgery, the other the charter of the Kansas City College Association. This college, though chartered under the laws of Kansas, it is said, is doing business in Kansas City, Mo. Senator Stocks spoke of it this morning:

"This college has no professors and no college building," he said. "Its sole business is in the sale of diplomas. I saw a letter this morning written to an applicant for a diploma. It does not say anything about studies or college courses, but says, 'Our diplomas are beauties.' For a diploma \$35 is charged. The only way we can get at these people is by annulling their charter."

Both of these institutions are in Kansas City. The "College of Dental Surgery" is run by C. R. Atkinson and the "College Association" by C. M. Tetrick. The bills to annul the charter were introduced at the instance of the Kansas Dental Society.—*Kansas City Star.*—*Western Dental Journal.*

We must add in this connection that our good friend W. C. Barrett, and others, are hot after a number of bogus dental colleges in Chicago. People are much exercised over the laxity of the law allowing such fake institutions to exist and the prospect is that the State legislature will at once take action to wipe these "diploma mills" out of existence. Too much praise cannot be given Dr. Barrett for this master stroke.

CO-OPERATION.—For many months I have been carrying on elaborate and very thorough tests of the various cataphoric controllers on the market, for publication for the benefit of the profession. The great majority of the manufacturers have cheerfully co-operated by submitting their instruments. For fear there are some good ones I have missed, I desire any person, manufacturer, or otherwise, who have superior instruments for controlling the electric current, that I have not corresponded with, to kindly let me know and I will be pleased to correspond. The work is thoroughly scientific, and exclusively for the advancement of science. There are a few much advertised controllers that have not been submitted, though I take all responsibility. If the profession are interested their co operation will greatly assist.

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CONTRIBUTIONS.

Treatment of Impacted Third Molar.*

BY J. R. BELL, D.D.S., CLEVELAND, O.

I BEG leave to call your attention to the local and systemic disturbance often caused by the eruption of the third molar and to a radical treatment for immediate relief and cure.

We often find a chain of symptoms arising in cases of this nature, which if not relieved become annoying. The first symptom is usually a sense of fullness, an obstruction, as if something foreign were in the mouth—and may be a dull nagging pain, which later becomes sharp, darting intermittent or continuous. The soft tissues covering the teeth become inflamed and swollen, pain is communicated through the fifth nerve to the seventh and occipital, and so on until every organ about the head is more or less affected either directly or by reflex. At this stage the temperature will rise, pulse become quickened, with fever of course, and a general systemic disorder will result, and if not now relieved the stages of inflammation follow, viz., suppuration and sometimes necrosis, or we may have septicemia with death dealing poison.

These teeth erupt so late in life, when the bones are so thor-

* Read before the Cleveland City Dental Society, Feb., 1899.

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oughly ossified and unyielding, and the absorption of the soft tissues covering the tooth so sensitive and slow that it makes them an unwelcome visitor. Over-crowded arches, small jaws and large teeth, but more often inequality between growth and absorption, is the direct cause for the abnormal development of the third molar. I have no apology to make in presenting this subject, on account of its having been so frequently discussed, nor because there is nothing new to offer. I will say, however,



that I was not a little surprised upon searching the standard works on dental surgery for information on this subject, to find little or nothing, and I have the following reference books from which to draw :

John Sayer Marshall, M.D., Face, Mouth and Jaw—1897—nothing.

Christopher Heath, F.R.C.S. Injuries and Diseases of the Jaws—1894—nothing.

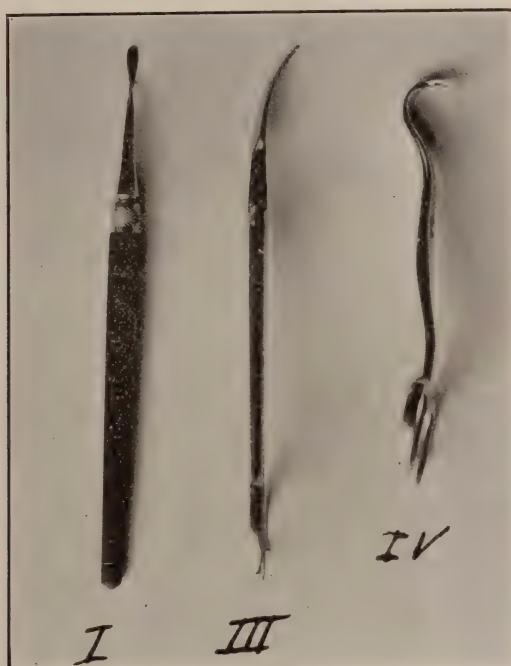
Norman W. Kingsley, M.D.S., D.D.S.. Oral Deformities—1860—nothing.

The American Text Book. Operative Dentistry. Edward C. Kirk, D.D.S.—nothing.

American System of Dentistry—1897—nothing.

Quiz Compendium Dental Pathology and Medicine—Warren—nothing.

Therefore, it would be natural for the dental student in searching for information on the subject, in the above text books, to infer that the operation or treatment for impacted third molars



did not come under this head, but under the head of the medical practitioner, or on the other hand, do we presume that these several authors, "men who are peers in our profession," never have had a case of this kind to treat and nurse along from underneath a covering of highly sensitive tissue, or do they advise the removal of these teeth, because they have so many aliases and condemn them in toto? I will answer that every practicing dentist must have cases of this character, and he cannot, and does not extract these teeth, but has the same unsatisfactory instruments and remedies for relief that you and I have. Some phy-

sicians treat impacted third molars by the old heroic method that their forefathers used, viz., surgically "and usually without a local anesthetic," by slitting the highly inflamed gum tissue covering the teeth, with a hatchet-shaped lancet. This naturally adds torture to misery, leaving two or more raw overhanging borders to retain fermentative matter to suppurate and absorb away. Systemically anodynes are often administered; locally the parts are painted with iodine. The operation for relief by the dental surgeon has not been very unlike the physician's, therefore we have nothing to boast of. The method of packing medicated gauze underneath the overlying flap of false gum tissue to force or hasten absorption and exposure is very unsatisfactory practice as most of us can testify. For want of proper surgical treatment, I claim these teeth have often been unnecessarily sacrificed. However, I am not here posing as a critic over what has or has not been done, but the wonder to me is that someone has not devised practical instruments for these cases long ago. The guillotine forcep devised by Claudius Ash & Sons of London, has never proved very satisfactory as I have tested it in numerous cases.

In Garretson's System of Oral Surgery he quotes "Salter." On page 1013 G. S. O. S. may be found what this author has to say on the subject. He first speaks of necrosis from lack of room for wisdom teeth, owing to the close relationship of the second molar to ramus of lower jaw, hence an irritation resulting in inflammation. The trouble, he says, to the bone is always preceded by more or less trismus and difficulty in deglutition.

The advent of the wisdom teeth is very often accompanied by painful and distressing symptoms that may be protracted through many months, or it may be even years, unless relieved by surgical interference. These circumstances arise from the position occupied by these organs, so close to the joint of the lower jaw, where the mucous membrane is reflected from the gum to the cheek and fauces, combined with the very common condition that the jaw is not sufficiently elongated backward to allow them to range in the horizontal series with the other teeth. This mechanical difficulty not only prevents the proper evolution of the teeth, holding them back in their bony bed, but it often prevents their direction of growth and dislocates them; thus *every chance is given for anticipating surgical relief.* This form

of necrosis is to be looked for between the seventeenth and twenty-fifth years.

The extraction of the second molar allows the wisdom tooth to fall forward, thus remedying the irritation and effecting a cure. These cases he goes on to say, if rightly treated, are as simple and harmless as they are found to be *severe* and *prostrating* if left to chance or improperly managed. *Extract the second molar tooth*, and do not attempt the removal of the offending one, if such extraction threaten difficulty.

Here is what Garretson himself says: An impaction of wisdom tooth is associated as a rule with inflammatory phenomena, and with false ankylosis of severe type. The trouble begins commonly with a sense of stiffness about the articulation, which is quickly accompanied by swelling and pain. Unrelieved, he says further on, "such a case is almost certain to develop an osteitis of a grade in severity that will quickly advance to the suppurative stage which result implies both of the parts, small or great in extent." Now, my practice is to relieve cases of imprisoned third molars surgically, whether it be preparatory for removal or retention of the organ.

My practice is as follows: First, anesthetize, either locally or systemically "if the conditions are favorable," the same as if for ordinary extraction. If the tooth is completely bound down by gum tissue, I first use the hoe-shaped lance, see Fig. I, and make a transverse incision through the gum from the lingual to the buccal surface, two lines longer than the diameter of the second molar, and below the coronal surface of the third molar. Cutting as closely as possible to the mesial surface of the second inferior molar. I then work a probe, Fig. II, into the cut, and loosen the tissue over the crown of the third molar, whereupon I insert the blade of the probe pointed scissors, Fig. III, on the lingual side, forcing it in to a point a line beyond the depth of the crown of the buried teeth, at the same time holding the concave side of the blade closely against the lingual side of the first and second molars, "these teeth serving somewhat as a guide in this application." Now I close the scissors, making a cut parallel with the jaw. Applying the curvature of the scissors to the buccal surface of same molars, insert the blade and make a similar cut, including sufficient tissue so that there will not be any over-lapping edge. Now there are three sides

of the covering severed. If this lid of tissue adheres at any point it should be freed, preparatory for the fourth and finishing cut which is to be made with the scissors, Fig. IV, with right angle blades. These are a universal instrument, and are designed to be inserted from within outward, one of the probe pointed blades to be carried underneath the posterior border of the flap of tissue to be removed, and with a single clip the piece is detached, thus leaving complete exposure of the crown of the imprisoned tooth. Hemorrhage in proportion to the amount of congestion of the parts follows this operation, and should be stimulated by either syringing or allowing the patient to gargle a warm antiseptic solution. It is to be understood that preparatory treatment is imperative in this, like *all* surgical operations by evacuation of serum, or pus, by the use of bichloride solution, pyrozone, whiskey, etc., making the parts as aseptic as possible. This of course should be done prior to the use of the hypodermic injections. By the use of the instruments the enamel is not abraded at all, and the inflammation is quickly and successfully reduced and the wound will heal if the "conditions are favorable" by first intention. Hot applications, a gargle of arnica water, pasturine, listerine, borolyptol, hamamelis, phenol sodique, may be indicated. An important object is to make the patient comfortable as quickly as possible. A mouth wash of water, 2 ozs.; carbolic acid, 20 drops; cinnamon extract, 10 drops—20 drops in a cup of hot water, is a soothing wash, besides being a good disinfectant and deodorant. The hot mustard foot bath at night before retiring augments sleep wonderfully in this as well as all surgical operations about the head. A hygienic diet, anodynes, cathartics, are called for more or less in all these cases.

When the blanket of gum tissue covers only a portion of the third molar the operation is much more simple, but in every case its removal should be complete, and wherever there is a loose fold of gum along the lingual surface of the tooth, it should be raised sufficiently with the flat probe, Fig. II, to admit the blade of the surgical scissors, down to a line as near parallel with the cervical border of enamel as possible. The buccal border in every instance should be trimmed as deep as the point of the trimmers can be inserted, so that when the operation is finished there will be no over-hanging strips nor pocket upon which the opposing teeth will occlude, or underneath which food and secretions can

be retained. Any pockets left around the tooth are germ breeding receptacles, where fermentation is sure to take place, irritating the soft tissue, and often destroying the enamel, and eventually causing irreparable decay.

The Process of Refining and Manufacturing Gold Foil.*

BY JOHN HOOD, BOSTON, MASS.

WE take gold, in any form or quantity, from one to twenty-four karat, and melt it with silver, alloying it down to ten karat. It is then granulated into small shot by pouring into water when in a melted state. The granulated gold is then boiled in a retort on a sand bath in nitric acid until the silver and base metals are dissolved, the gold remaining in the shape of brown mud, which is then washed, dried and melted. The result is what we call parting gold, which is .996 or .998 fine, and it is from this that most gold foils are manufactured. We then take this gold, roll it into a thin ribbon, immerse it in nitro-muriatic acid, which dissolves the gold and leaves the silver. Before, we dissolved the silver and left the gold.

This gold solution is then filtered to get rid of the chloride of silver, which is very light and floats to a certain extent. By filtering we get a pure solution. The gold is then precipitated.

After the gold is precipitated, it is first washed and dried, then melted and poured into ingots one inch wide, which are rolled thin in regular jewelers' rolls, and then annealed.

The ribbons are then cut into square pieces and put into a cutch made from ground parchment, which holds about two hundred pieces. The cutch is then placed in parchment bands and beaten with a twenty-pound hammer, for fifteen minutes, on a granite block weighing about seven hundred pounds. Every five minutes the cutch is opened, and the gold examined; the cutch is then split in half and the position of the pieces reversed, so as to bring the center pieces on the outside and those on the outside into the center of the pack, the reason being that the gold in the center spreads more rapidly than that which comes next to the

* Read before the Vermont State Dental Society, March, 1899.

hammer. The reason of this we cannot explain, but simply state it as one of the facts concerning the manufacture of gold foil.

We continue beating this cutch, reversing it every five minutes, until the proper size is reached.

Four cutches are used in one beating, making eight hundred pieces of gold. The gold thus beaten is laid out of the cutch and filled into a mould made from the intestines of the ox, and as thin as the skins of this mould are, they are two stuck together. As there is a rough and a smooth side to each skin, the two rough sides are stuck together, making what is known as gold-beaters' skin.

A mould contains eight hundred skins, which represent five hundred head of cattle. On the ends of each mould are fifteen or twenty old skins, called "wads," and outside of these several wads made from parchment. These wads protect the gold from the hammer. The mould, before using, has to be put in order by pressing. This is done by putting it into a hot press between pasteboard, turning them every five minutes for one-half hour and then separating each skin to let out the dampness. This is called giving the mould a fly. Sometimes we have to give a mould two or three flies. It depends upon the weather. In winter, when it is dry, the moulds often need no pressing whatever. In fact, they are so dry, the gold will sometimes stain. When the moulds are too dry, they beat the gold too solid. At this time we look for complaints. The cry is, "Your gold works stiff; it rattles like a tin pan," etc. On the other hand, in the summer, when we have dog days, it tries the gold-beaters' souls. We give the moulds fly after fly, and still they are not dry enough. The hammer then generates heat very rapidly, and we have to be very careful not to spoil our mould. This is done by generating so much heat by the hammer that the mould will be drawn in the center and absolutely ruined. At this time the gold will be so porous that if you hold it to the light it will look like a cobweb. At this time it works softer than it does when the moulds are dry, but the complaint is that it is not tough, the instrument cuts through, etc., so you will see that a gold-beater's life is not all clear sailing.

When the cutch gold is filled into the mould, we place the mould with the eight hundred pieces of gold between the parchment bands, the same as we did the cutch. We then beat on the

mould about one hour, with a ten-pound hammer, stopping every five minutes to examine the gold, to see how it moves up. We have to be very careful not to beat over the edges of the gold. If we do, the gold does not spread.

After the mould of eight hundred pieces is beaten to about four and one-half inches square, it is laid out, piece by piece, on a calf-skin cushion lined with flannel. It is then cut to size with what we call a wagon. This is a frame carrying two pieces of Malica reed, such as canes and musical instruments are made from, split into four pieces. When these reeds get dull, they are sharpened by taking a shaving off the edges. After the gold is cut to size, it is placed between pieces of paper. It is then taken and annealed on a piece of platina, piece by piece, to a cherry red. As unannealed gold is called for sometimes, it is put up without being annealed. Understand, I have been talking so far about Nos. 2, 3, 4, etc. of book foil. Later will give you the process of cylinder gold.

After the gold has been annealed, piece by piece, it is then weighed. A book is balanced in the scales, then one-eighth of an ounce put in and that is balanced. This gives one-eighth of an ounce to each book. It is then put into envelopes, marked, and is ready for sale.

In making gold for cylinders, it is beaten as described before. It is then placed sheet by sheet, between paper and enclosed in an iron box, with weights on the gold. The iron box is then placed on a slow fire and allowed to smoulder, care being taken not to ignite the paper. After smouldering, the heat is gradually let on until the paper becomes carbon. As the paper shrinks, the gold shrinks with it. The carbon is then blown off, sheet by sheet, and we have what is called corrugated or crystalline gold. This is then rolled into form and cut to size, and made into style A, B and C cylinders. I have been told that corrugated gold was discovered at the time of the big fire in Chicago. When the gold was taken out of a safe, in one of the dental depots, it was found to be corrugated. I claim to be the first one who made and sold corrugated gold; this was in 1867. Some years later a patent was taken out for the process and I was threatened with suit, unless I discontinued its manufacture. This I declined to do and no suit was entered.

I have now given you the process of refining and beating

gold foil as practised by me. I will now treat on non-cohesive gold, soft gold, cohesive gold, discoloration of gold, etc.

I have been amused many times in hearing dentists wrangle at conventions over the working of non-cohesive gold, also to see it quoted, in many papers written by dentists for the JOURNALS, that non-cohesive gold contained impurities, and eminent chemists have assayed it from time to time and found a certain per cent. of impurities. Now doesn't it seem rather strange that no one as yet has ever been able to name these impurities. A chemist is supposed to be a pretty smart man ; but facts are stubborn things, and one of these facts is that as yet no chemist has been able to name the so-called impurities in non-cohesive gold.

At present non cohesive gold is used very little, and, as its use is not taught in most of the colleges of to-day, it looks as if its use would soon become one of the lost arts. However, if I am allowed my opinion, I wish to say that non-cohesive gold, used by one who understands it, and in cases where it is possible to use it, is one of the best filling materials to save teeth that we have. But how few there are who know how to use it. Those who do are passing away, and will soon join the silent majority.

Non-cohesive gold is called by some, unannealed. We make a strictly non cohesive gold. At the present time the sale is very limited, and grows less every year. Those who use it are old practitioners ; in fact, I do not know of any young dentist who uses it at all. I have heard some dentists, at conventions, speak of non-cohesive gold as unannealed gold. Now, they would have a sorry time of using unannealed gold for wedge filling.

Some years ago the late Dr. Joshua Tucker, of Boston, came to me and asked me to explain, if I could, how it was when he spoke at conventions about how difficult it was to use soft gold in some cases, that some young student, just graduated, would jump up and tell how easy it was to use it. I told him it was easy to explain. "Well," he said, "I am writing a paper on gold, to leave behind, as I expect to stay on earth but a short time, so, if you can give me any points on this working of gold, do so." I said to him, "When you used gold years ago, before you bought of us, you used Abby's soft gold." His answer was, "Yes." "Well, now," I said, "this gold was a non-cohesive gold. The gold the graduates of to-day are talking about is really a cohesive gold. In fact, it becomes cohesive by annealing, which the non-

cohesive does not. In other words, with the graduates' soft gold you can build down teeth, but not so with Abby's soft gold, as that is, strictly speaking, a non-cohesive gold, and does not become cohesive by annealing." After this explanation to the old gentleman, he said, "Well, it is all plain to me now. I never could account for the fact that the young men of the profession could do so much more with soft gold than I could."

Now, some who hear this will take exceptions to non-cohesive gold not being made cohesive by annealing. To those I will say, "Do not misunderstand me; I am talking about cohesion, not mechanical union or interlocking." Of course, it is possible to fill a tooth with non cohesive gold and apparently make a cohesive filling of it, but the dentist who does this will find he has a delusion and a snare, because he has no cohesion. It is done by mechanical union and interlacing with sharp serrating pluggers or packers, as one of you professors would say. Take this same non-cohesive gold in sheet, in fact, take any number of sheets, anneal them red hot, now place them on top of each other; now take the same number of sheets of cohesive gold and do the same and note the result. The non-cohesive gold can be separated sheet by sheet, but the cohesive gold has cohered together in one mass. Now, by mechanical union force and sharp serrated pluggers, you can force the non-cohesive gold together. But is this cohesion? We think not. In fact, you may be able to build down a tooth with non-cohesive gold by mechanical union and interlacing, but you have no strength. In fact, the filling is a delusion and a snare; and there is the trouble to-day with dentists who write for the dental journals. They do not know what they are talking about when they speak of cohesive and non-cohesive gold. They seem to think it is one and the same. Here is a late quotation from one of the journals: "If pure gold foil is exposed to the atmosphere for any length of time, it gathers upon its surface an imperceptible film, which, while not affecting the purity of the substance itself, it interferes with its cohesion. Two pieces of foil in this condition may be rubbed together without adhering. This is called non-cohesive."

Now, that is where a great many dentists are led astray by such writings. Cohesive gold cannot be made non-cohesive any more than non-cohesive can be made cohesive. Any non-cohesive foil that can be made cohesive by annealing is not a non-cohesive

foil. The more you anneal it red-hot, the more non-cohesive it becomes. Speaking of cohesive and non-cohesive foil in one foil is like saying a thing is very black and very white.

Some years ago, when on a vacation, I called on a dentist and had several discussions on gold, finding him using non-cohesive gold. I told him I thought he must be mistaken on the cohesive point. The next day I called at his office, and he was engaged in building down a lateral incisor for a lady. He smiled on me, and said, "You see you are mistaken about non-cohesive gold, I am building down this tooth with it." I said nothing, but continued to watch him. He looked at me from time to time, with a smile childlike and bland, that said—you see you Boston folks don't know as much as you think you do. However, his smile soon changed to disgust. As he was giving it the finishing touches with the burnisher, the whole filling collapsed and dropped out. About that time I thought it was time to go to dinner and bid the doctor "good day." After dinner, he called on me at the hotel and acknowledged that I was right, as he found, upon examination, that the filling could be picked apart, piece by piece, as it was put together. In fact, there was no cohesion about it. He had made the filling by mechanical union and interlacing.

Now, then, in regard to soft gold. I admit this is wrongly named. It should be semi-cohesive gold. This gold is made halfway between the cohesive and non-cohesive. In other words, it is made the same as you would temper an instrument. We do not temper it so much as we do the non-cohesive.

Cohesive gold is simply pure gold, as it comes from the refiner. It is not treated in any way. The great difficulty is to get it absolutely pure. You have no idea of the care and skill it takes to produce pure one thousand fine gold.

Cohesive gold has the peculiarity of welding cold, when it is freshly annealed and free from moisture or foreign matter. But how easy it is to destroy this cohesion. The fumes of most simple gases will do it. We have frequently had complaints of our gold working badly, when the trouble was that the painters had been at work painting the office. Creosote, carbolic acid, etc., will also destroy the cohesion of gold. Then, again, how many destroy the good qualities of gold by overheating. I have seen some dentists melt gold in annealing it, and then complain

that it works hard. Cohesive gold, if in the right condition, should be capable of cohering to itself without any pressure whatever. Anneal say six pieces, more or less, place them on a table. Then take up one and gently drop it on to the next piece, and then back to the next, and so on. If it is cohesive gold, you will find that you have all firmly welded together. Then, we have dentists say that our gold is too hard. Before we were acquainted with the working of gold foil, this used to puzzle us; how pure gold could be hard? However, we soon found out that the dentist did not know how to express himself. He really meant too cohesive, and therefore welded together before he really got it where he wanted to put it. In fact the most cohesive gold ever made is as soft as non-cohesive. The difference is that one sticks together and the other does not. However, we admit that gold works differently at different times, caused by the condition of the skins, as explained in pressing the mould. These skins are like our hands. In summer they are moist, in winter dry. Therefore, foil does not require as much annealing in the winter as in the summer.

In regard to discoloration of gold fillings in the mouth, I hardly feel that I have time to discuss this subject. It is one of the most annoying troubles that dentists have. As far as the gold is concerned it cuts no figure. You will have to look for the cause elsewhere.

Some years ago we started in to find the cause, and have been on the road ever since, but have not found all the causes yet. However, here are many causes, and you may take your choice. We have tried to make a gold that would discolor in the mouth, but failed. I had two dead upper bicuspid teeth. These were badly decayed at the margin of the gum. In fact, it was a good place to have filling discolor. I also had a lower tooth decayed. I prepared some gold, for the two bicuspids, alloyed with iron. This gold, when annealed red-hot, turned as black as coal. When it was slightly annealed, it would not discolor, but was cohesive enough to make a good cohesive filling. These two bicuspids were built down with this gold. I took pains to keep away from these as much as possible when cleaning my teeth. However, these fillings have never shown any sign of discoloration. On the other hand, the lower tooth was filled with our best cohesive gold, and after about two years it turned as black as coal, and is.

black to this day. This case was reported in the *Johnston Bros Journal*, at the time, by Professor Thomas Chandler. At this time I went through a long course of experiments with him, which are too numerous to mention. I also gathered together about one ounce of old discolored fillings, and took them to Dana Hayes, the State Assayer, who analyzed them for me and pronounced the black deposit sulphide of gold. These experiments were tried in 1875, and I satisfied myself at that time and have not had any cause to change my mind since, that the discoloration of gold fillings is only on the surface and is no fault of the gold. I also found that by taking a piece of refined gold, say six inches long, burning one end in a little spirit lamp, a little globule would melt bright; burnish the other end, say two hundred times, more or less, and it would discolor a dark red, showing the gold took iron from the burnisher.

In conclusion, I will show you the difference between the precious and base metals. I hold in my hand a bar of pure gold, also tin. You notice I can bend the tin back and forth with ease. In fact, after continued bending, the tin will fall apart. Now notice the difference with the pure gold. I bend it once, twice and that is all. It has stiffened up so it cannot be bent any more. Now this same thing takes place in a gold filling. The first blow you strike your foil causes it to stiffen. Therefore, be sure you get it placed before you strike the first blow. This holds good more in the precipitate gold than in foil and cylinders. Coax your gold into position before striking the first blow.

In conclusion, I will say I served my time as a gold-beater and then was taught the art of refining gold and its manufacture into gold foil. I then traveled on the road, calling on all the prominent dentists in the country and large cities. I have stood over some of the best operators and witnessed a great many difficult operations, both in private offices and dental colleges, and must acknowledge that I owe much of my success as a gold foil manufacturer to what I have gathered in this way.

Southern Branch National Dental Association.

SECOND ANNUAL MEETING.

NEW ORLEANS, LA., FEB. 9-10-11 AND 13, 1899.

(Special Report, for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

*Continued from page 173.***Operative Dentistry.**

BY J. G. FIFE, DALLAS, TEXAS.

IN his general review of the subject Dr. Fife said that all egergies were being devoted to the substitution for gold of that which would be less conspicuous; to improve the quality of and the manner of manipulating and inserting amalgams; to produce a stable cement; to improve upon unscientific methods in the treatment and filling of root canals; to ascertain the etiology of pyorrhea alveolaris and to discover a line of treatment that will eradicate this fell destroyer of the dental organs; in fact to elevate dentistry to the highest scientific plane, and the dentist to the highest tyte of manhood.

The most prominent movement is towards the development of the artistic. The literature of the year bears evidence of profound and minute investigation. The report concluded with a list of some of the best papers which have appeared during the past year.

DISCUSSION.

DR. McKELLOPS expressed his renewed surprise that so little attention is given to the use of platinum gold for the anterior teeth, so little that it was with difficulty the manufacturers could be induced to continue its manufacture, and yet it is the ideal filling material for the front teeth. He said, *Why* don't you use it, and do yourself, your profession, and your patients the most good.

DR. H. A. SMITH spoke of the new obtudent vapocain and the theory of the action of this new etherial solution of cocain.

DR. T. P. HINMAN has had good results from vapocain, in five minutes, in a very sensitive cavity. Dr. Hinman is working the Jenkins system of porcelain inlays, with very fair results.

DR. W. V. B. AMES has not been favorably impressed with

porcelain inlays. He thinks that where a porcelain inlay can be used once, gold inlays can be used nine times. He said that with the ability of a Dr. McKellops, nothing could equal platinum gold, nothing could equal that material for anterior teeth.

Following the advice given by Dr. McKellops in 1875, DR. T. M. ALLEN has been using platinum gold ever since, and having the choice of three shades it is possible to so fill anterior teeth that the fact of its being a gold filling is not perceptible, corners can be perfectly built out and it resists the wear of mastication perfectly.

DR. L. A. SMITH, Port Gibson, Miss., read a paper on THE ADVANTAGES OFFERED IN A COMBINATION OF DIFFERENT FILLING MATERIALS, and the effect of different filling materials upon the tooth itself, the deposits of secondary dentine bearing some analogy to the encysting of foreign bodies by the soft tissues. He had not had favorable results from the combination of tin and gold.

DR. J. Y. CRAWFORD spoke very strongly against the use of amalgam, either singly or in combination. In the use of tin and gold he has recently been reversing the usual method and uses gold next to the tooth substance, especially at the cervical walls, where it does not turn dark as does the tin usually placed there. He believes that the secondary deposits are made in spite of, rather than because of the presence of an irritating filling. The treatment of the teeth may bring about conditions which stimulate powers of resistance in the teeth themselves, by which their subsequent integrity is maintained.

Notes on Materia Medica with Comments and Criticisms.

BY H. H. JOHNSON, D.D.S., MACON, GA.

He spoke of the many new and wonderful chemical combinations that are being brought to our attention, the dental supply houses not being entirely exempt from criticism in this respect, new appliances and preparations being often pushed forward before they have been fully tested or their practical value proved. He spoke of the widely diverging theories in regard to the use of coagulants, one party claiming that the coagulated albumen prevents the diffusion of the medicament; the other side claiming that the coagulum is redissolved after being formed, and the

agent readily diffused. The only way out of the difficulty is to assume that either theory may be correct, since both appear to be equally well tested, and use our own judgment. Those who in the past relied upon carbolic acid and creosote certainly saved many teeth in spite of these coagulants. Dr. Johnson concludes that possibly it was because the mechanical preparation was so perfect that there was not very much albuminous matter left to be coagulated, assuming of course, that the coagulum would be a barrier to diffusion.

Recent writers on formaldehyde have quoted the conclusion reached, being that it is too intensely irritating to be used in sufficient strength to have the value of other well known and tested antiseptics. Eucaïn as a substitute for cocain was favorably considered.

DR. BARRETT spoke very forcibly in favor of continuing the use of the old and tried remedies which have done good service, the comparison with the newer chemical combinations with which we are being overloaded by the manufacturers. He said, do not let us abandon these old and tried remedies; the claims made for the newer agents are not made upon clinical experience but are based upon theory. Relying upon the results of personal experience may not be so scientific but it is evidently satisfactory.

DR. CRAWFORD spoke of the value of carbolic acid in the treatment of abrasion or erosion. Carbolic acid not only reduces the sensitiveness but holds erosion in check. It is also valuable in the treatment of root canals, aiding nature in closing up the apical foramen.

DR. H. A. SMITH spoke of the theory of Dr. A. C. Hart, of California, as to the value of formaldehyde as a prophylactic in dental caries, and as silver nitrate has been used, but with the advantages of being free from discoloration. In a case where the dentine seemed to be dissolving out from under the enamel, the application of formaldehyde apparently arrested the action. While it is not well to try every new thing that comes up, many of them are good and what we need.

DR. L. M. COWARDIN said he had only an empiric knowledge of formaldehyde; but it appeared to him to be rather a remarkable agent. Experimenting with a view to a formula for an antiseptic mouthwash, he had found that one-third to one-half of one per cent of the 40% solution as we get it, added to the value of

the mouthwash in relieving sensitiveness at the cervical borders. It rapidly deodorizes putrescent root canals and the odor does not return, but it is also apt to produce apical irritation.

DR. S. W. FOSTER spoke of the value of iodine in the treatment of root-canals when used as a vapor, by means of Blair's vaporizer; it is especially valuable after treatment with the essential oils.

DR. B. HOLLY SMITH does not think that formaldehyde, in its 40% per cent. solution is applicable to the treatment of live teeth, especially when deprived of enamel. He thinks too much prominence has been given to the theory of Dr. Hart. He thinks almost any other agent would have about as much effect in a mouthwash as one-third of one per cent. of the 40% solution formalin.

DR. C. V. VIGNES, New Orleans, La., read a paper on the Treatment of Pulpless Teeth by Iodoform Fumes under Pressure, using the Blair vaporizer. Dr. Vignes detailed the method of treating pulpless teeth under the three classes: a dead pulp that has given no trouble; with fistulous opening through the gum, and so-called blind abscess. Dr. Vignes after an experience of nine years with the vaporizer, claims that by this method there can be accomplished with certainty that which requires patience and perhaps several weeks of tedious work to accomplish by any other method.

DR. T. C. WEST, finding the odor from iodoform so uniformly objectionable, had experimented in other directions, and has obtained very good results from the use of acetanilid in the vaporizer, and has been using it for several years. As a deodorizer for root canals it is perfect.

DR. BARRETT said he would like to know what special quality iodoform has that it should be considered infallible; that it should *always* give good results. He could not conceive that any single remedy could produce such uniform results, penetrating infallibly all the tissues. Iodine is undoubtedly beneficial in many cases, but he cannot conceive of such wonderful results as are attributed to it by the essayist.

DR. VIGNES in closing the discussion said that he could only speak for the uniform results attained in an experience of nine years. He had not tried acetanilid. He had tried sulfur, but could not control the heat with sufficient accuracy.

Chemistry, Metallurgy and Anatomy.

BY DR. A. B. KING, BALTIMORE, MD. (CHAIRMAN.)

HE reported great progress made during the past year in the discovery of new elements, no less than six having been added to the list, though the details in regard to some of them are so meagre that there is, perhaps, reason for doubt as to their actual existence as elements. Three of the new elements—Krypton, Neon and Metargon, were discovered by Prof. Wm. Ramsey, and found with argon, after it had been isolated from liquid air. Polonium is in the form of a sulphide of pitchblende, resembling bismuth chemically, and with a radiating power 400 times that of uranium; the latter element throwing off an invisible radiance much like that of the Roentgen rays. Caronium has thus far been shown only by the spectroscope, and only in the solar atmosphere, though at a distance of 300,000 miles from the sun's surface.

Etherion is an element which Mr. Chas. F. Brush, the well-known electrician, thinks he has discovered in the earth's atmosphere. Its heat-conductivity is 100 times as great as that of hydrogen.

The work upon the proteids, their decomposition and digestion products, has been exhaustively studied during the past year. Of especial interest are the studies by Kutscher, upon the body named by Kühns, antipeptone.

In anatomy the most important work of the year is the paper by Dr. G. V. Black, in the *Dental Cosmos*, for February, 1899, in which the author claims to have discovered a series of glands in the peridental membranes, with ducts leading to the gingival margin.

Defective Tooth Development.

BY DR. L. M. CAWARDIN.

THE patient, who is nearly fifteen years of age, has the temporary superior laterals and canines still in place, with no sign of absorption of the roots or of the approach of the permanent teeth. The first temporary right superior molar has been replaced by a well-formed canine; the second right superior temporary molar is still in place, with nothing to indicate the approach

of a bicuspid. The left superior temporary molars were lost two or three years ago, but there is no intimation of the approach of the bicuspids. Both right and left first and second superior permanent molars are in place and well formed. The inferior permanent incisors and canines erupted at the usual time. With the exception of one, the temporary inferior molars are in place with no sign of approaching bicuspids.

The papers were passed without discussion.

DR. H. H. JOHNSON, Macon, Ga., Chairman of the committee, presented as his report, a subject-index of the journalistic literature of the past year, upon pathology, materia medica, and therapeutics, which was ordered published in the Volume of Transactions, as being of great value for reference.

(To be continued.)

Proceedings of the Cleveland City Dental Society.

AT the regular monthly meeting, held February 6, 1899, Dr. J. R. BELL read a paper on "The Treatment of Impacted Third Molar." (See page 217, this issue). Discussion was as follows:

DISCUSSION.

DR. ACKER: The question is, what does an impacted molar mean? To me it would mean one so situated that it could not erupt, for it is a question whether one simply covered by gum tissue is an impacted tooth. But the treatment suggested by Dr. Bell is that of removing the soft tissues. I have accomplished the same thing with a smooth hoe shaped instrument. If we do not remove overlapping tissue, it will be done by suppuration.

DR. EBERSOLE: I have always been of the impression that a truly impacted third molar is one that is bound down by hard tissues. I do not believe that the removal of soft tissue will cure a truly impacted molar. Nature or some other force must complete the operation. How are we to do it? The essayist's method of removing the soft tissue is away ahead of anything that has been brought to my attention, but what we want in these cases, is a method of removing bony obstructions. My method is

always to remove the soft tissue and then to cut away the bony obstruction. The gouge which I use for this is a bone gouge, with a concave blade, which fits closely to the convex surfaces of the tooth, and I use it by passing it along the buccal surface, and by using a mallet make a longitudinal cut there. I then go to the lingual side and cut this in the same way, then go over the crown of the tooth and chip out the piece that binds it in this region. In the cases which I have used this method, I have had excellent results.

I do not believe it is a good practice to use local anesthetic in the removal of these teeth, and I consider it unwise to attempt to remove the worst case while under nitrous oxide. My objection to it is that we have to operate so rapidly and in many cases have the mouth in a trismatic condition, where it is almost impossible to get it open, and then the tonic contraction of the muscles, produced by the gas, also acts to prevent good work. It is the surgical and after treatment of this class of cases that gives us the most trouble. I believe it is better for both operator and patient to use one of the "major" anesthetics. We can take our time and use care not to injure the surrounding tissue. And the danger to both patient and operator is greatly reduced.

DR. RAMALEY: In cases of trismus, where the jaws are closed and a very small opening being left in which to get at the impacted molar, what is the best treatment?

DR. OWEN: Dr. Bell's method of removing the third molar is very good, clean and all that one could desire, but I would warn the younger men who have not had the experience, that there is such a thing as cutting too much of that soft tissue away, as there are a number of large arteries there and you may have more trouble on your hands than an impacted molar. I have used something the same method, but not with such a complicated scissors as Dr. Bell used. I use a special hoe lance, and then the surgical scissors for either side. As to removal of the hard tissue, I must confess I never came across cases that required surgical treatment under such circumstances. As to methods of removing these teeth when necessary, don't know as it is necessary for me to say that my advice is not to try to remove that tooth while the inflammation exists, and as in the case where the tooth is obliquely set, or almost horizontal; that is, indeed, a case which requires a great deal of skill. I have been in the habit of using an elevator in the extraction of the tooth.

DR. BROWN: I had a very interesting case in which I made a plate for a gentleman who had had all of his teeth extracted for a number of years. In about six months he returned with a swollen face, and on examining it I found on the left side an enlargement where the third molar had erupted, and it was giving him a great deal of pain. I suggested cutting down into the gum, below the soft tissue, to see if I could not remove the third molar. I did so and when I got down I could find only one of the roots of the third molar. I took a sharp drill and cut down and removed that, and the tooth has never erupted and probably never will. I had a case of a lady with an impacted tooth, who had the bicuspid teeth all perfect and sound, but who came to me complaining that the second superior bicuspid was very sore. I examined it very carefully and found it a perfectly sound tooth. I treated it, and dismissed her. She came back next day, saying that the soreness and pain continued. I treated it for some time, but the inflammation continued to be bad and as it was steadily getting worse I finally decided to extract it. I did so and found a tooth impacted there, and I found that it was a fully developed bicuspid, and she had all her other teeth perfect beside.

DR. JACKMAN: I wish to mention a certain instrument made by Ash & Son, which I find is a great help in removing tissue. It is a forcep with a beak that acts like a forcep, and you can get the whole of the soft tissue at one snip, and give your patient not one-half the pain that you would with any other instrument. I have a little case here. It is a supernumerary bicuspid and I wish to show you the tooth because it is a perfect one. This lady was about 35 years of age from whom I took the tooth, and this tooth began to show itself about six months ago. It is a perfect bicuspid and is just as it was before it was extracted. I will just say that in a practice of a number of years I have extracted many supernumerary teeth, but I never extracted a perfect one before.

I would like to ask Dr. Ebersole if an engine bur would not be a better way of chipping off any bone that obstructed the eruption of the third molar?

DR. LODGE: There are cases when through very acute inflammation it has been impossible for a patient to open the mouth sufficiently to operate, with any degree of ease, and it seems to me that in such cases a general anesthetic is indicated. In other

cases, however, we can operate with local anesthetics, and I would like to say right here that in the case of local anesthetics we can do nothing better than apply the new one, eucaïn. I am using it instead of cocain, and find it very satisfactory. Being less dangerous than cocain, I can use larger quantities of it, and I find that the after effects are not as bad as those of cocain. The wound seems to heal more readily and produces the anesthesia as decidedly as cocain. It will be found also that there are cases where the third lower molar will be the cause of reflex troubles, and it may be difficult at the onset to tell what is the cause of the troubles, but there is a satisfaction in knowing that hereafter we will have recourse to the use of X-rays. I am glad to know that Dr. Price is able to produce the X-rays in his office.

DR. HUNT (of Indianapolis): I had a case once which was a very difficult one to operate on. Of course there had been no pain there, but there was pus and necrosis of the bone. I thought at first that I would operate and at last decided to use medical treatment, because the patient was so nervous, so I treated the bone with aromatic sulphuric acid, with good results. As every dentist cannot have the latest appliances nor the skill required to use them, I think that these special cases should go to the specialist. Every man should not attempt them because they are clear across the border of oral surgery, and while we want to know and ought to know how to do these things, yet it is better for us if we have a good man to send the very difficult cases to him.

DR. STEPHAN: There is one thing I do which I wish to mention, and that is that I remove all material within that cavity and then I use trichloroacetic acid to wash out the tissues. I am speaking simply of those cases which I had lately.

DR. BARNES: I have been waiting to hear some one say trichloroacetic acid. I have used the method and can recommend it as highly as Dr. Stephan. If rightly used it is almost painless. I have used a 100 % solution and a 50 % solution, and I prefer the full strength, and also find it better to use the crystal. I usually raise the flap and put a little cocain under it. I do not believe in pumping cocain into the gum, but I do use the crystal and the trichloroacetic acid. I lift up the gum and put in a few crystals, and then put in the trichloroacetic acid, full strength. As for the impacted molar, I believe with Dr. Hunt, that the best thing we can do with these cases is to send them to the other fellow, except

when we have a man in our own city who is up in this kind of work. I like the instruments Dr. Bell has here to night very much. They show originality and adaptation, and ought to be commended on that score.

DR. AMBLER: We shall be pleased to hear from Dr. Price the advantages of the X-rays in this condition.

DR. PRICE: I haven't enough pictures yet of this condition to give you much idea of the work that I am doing with the X-rays, but what I have have been very helpful and instructive. I have got beautiful radiographs of all the tissues concerned, by throwing the rays through at right angles to the maxilla, against specially contracted plates placed in the mouth. And in extracting these third molars I could see how the X-ray picture would be of great help. In locating an unerupted supernumerary, it is beautiful. I shall show you later some cases of that kind. It has also been of great benefit in locating the cause of abscesses where I have found some other fellow had accidentally broken a portion of a broach in a root and left it probably without his knowledge. A case in which it was of service, was that of a young lady who broke off the point of a fine cambric needle in her tooth, and I was able to find it. I can see how it is going to be of the greatest importance with soft tissues and bony tissues, and I shall be glad to show you illustrations of this later. I use a rotary trephine knife in the engine, instead of a lance, and it works well. I use a local application of guaiacol on the surface first. With this method you can cut it away just as you would take so much peeling off from a potato, and the beauty of it is that you not only cut, but you take your chips with you. I admire the method introduced by Dr. Bell very much.

DR. WHITSLAR: Outside the use of anodynes, which have been given to relieve pain, I have found that the removal of these teeth is often the best plan. I believe in removing a portion of the bone, with a bur, on the lingual side of the tooth. On that side it is thin, while on the buccal side it is too thick for one to operate well. In looking up the literature of the subject last night, I was interested to find authors, notably English authors, speak of irregularities caused by impaction of the third molar. I did not know that before, but I presume Dr. Harvey has noticed irregularities of the teeth occurring from impacted third molars. I have not noticed this in American works, but found it only in

English books. I have found a great deal of relief in trichloroacetic acid for inflamed gums, and also wine of opium, which is an anodyne as well as a stimulant, and we get the stimulating effects of this remedy in many serious cases of impaction.

DR. BELL: I have never been obliged to interfere with the bone around the third molar. I said that either for removal or reduction of the tooth I made this operation. I said this because we do not always know the condition until we look beneath this tissue. Then, if we find a normal crown, we can very quickly determine whether we had better remove it or not, if the crown is normal, or if it is decayed. If the second molar is normal, then I would sacrifice the third molar before the conditions become worse; it is safer and better than have to sacrifice the second molar. In regard to anesthetics I find that either local or general anesthetics are to be employed according to the conditions existing, and the adaptation of these anesthetics should vary with the question of the conditions. As far as any anesthetic is concerned I have used trichloroacetic acid, and have been sorry for it, not only on account of pain, but on account of the third molar, which I found might have been saved if I had not used it. That was what made me devise these instruments.

You know that after the removal of tissue the occlusion is almost immediate. You cannot get this out perfectly by any method except by anesthetics or by this process. I made my pattern of the scissors in lead, and took them to Fred. Hassell & Co., of New York. I know of no other way of reducing the inflammation than the usual way. If you have a sliver in your eye or in your finger, you endeavor to get at it and remove it, and in the same way I remove the gum tissue and get at the inflammation. But if I struck a case where I could not operate, on account of fixed jaws, I would call a physician and administer an anesthetic, and in that way you would only have to carry a person to a sense of relaxation and unconsciousness, and you could perform the operation. There might be such a thing as producing a capillary hemorrhage, that would result badly. However, I have never had to use any styptic at all. When you have cut that wound so it is smooth, it will heal by first intention, when it would not heal if you had a rough or ragged wound.

DR. EBERSOLE: How would you remove a tooth that came in at right angles to axis of the second molar?

DR. BELL: I would simply drill into the crown of the molar, directing the drill to the pulp, then with a disc cut out the crown of the offending tooth. I sometimes split them off, sometimes chip them off. I never have any trouble to do it, because there is little bone on the crown. There will be very little bone on it, but of course there is heavy bone around it that you would not care to disturb.

DR. EBERSOLE: I would like to answer Dr. Wasser's question as to why I do not use a bur in this class of cases. I would say that at many times it is hard to handle a bur in this location. Burs for cutting bone will become clogged and interfere very much with the rapidity of the operation. I have also seen periosteum stripped up for quite a distance, with the use of the bur, in this location. The fact that the patient cannot open the mouth wide enough, helps to interfere with the use of the bur.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

Pulp Amputation.—Dr. Billetier, of Schaffhausen, Switzerland, publishes a report of 801 cases of pulp amputations. He filled the pulp chamber in

599 cases with tin.

113 " " oxychloride of zinc cement.

89 " " formalin cement.

Of all these cases 30 or 37 per cent. were failures; the tooth had to be extracted after being filled from eight days to six years. The failures classify themselves as follows:

Tin fillings, - - - 4.6 per cent.

Oxychloride of zinc, - 1.7 "

Formalin cement, - - 0. "

The formalin cement was prepared by mixing equal parts of formalin and phosphoric acid with which the zinc oxide is incorporated. Dawson's cement is preferable, as it is non-sticky.

Previous to the amputation, the pulp is cauterized with arsenic. With a small pellet of cotton, moistened with creosote, a

small quantity of the powdered arsenious acid is taken up and placed in the cavity on the exposed pulp or on the thinnest portion of the covered dentine. Pressure should be avoided. Cotton saturated with sandarac will keep the arsenic in place. The operation should be performed under a rubber-dam and under strictly aseptic precautions.—*Ref. Journal für Zahnheilkunde.*

Treatment of Stomatitis.—In twenty cases of severe stomatitis the author used aneson and orthoform instead of a 2 per cent. cocain solution to overcome pain and to facilitate the partaking of food. He had occasion to use aneson fifteen times and orthoform five times. In all cases the results were gratifying. The remedy had no direct bearing on the disease itself. Aneson is taken up on a pledget of cotton and the parts painted with the liquid about fifteen minutes before meals. If the disease is very painful, a second application, about five minutes after the first one, will be necessary. Orthoform is simpler in its mode of use. With a powder blower the affected parts are well covered with the drug about ten or twenty minutes before each meal.—*Dr. Goeppert, Ref. Wienerzahnarzt. M.-Sch.*

Headache Cured by Extraction of Teeth.—An anemic lady of about 30 years of age suffered for seven years with headache. Medical treatment brought no relief. The lady came to her dentist to have some work done. The doctor extracted fifteen roots in three sittings and the headache has since left the patient.—*Dr. Friedemann, Ref. Wienerzahn. M.-Sch.*

A lady had suffered with neuralgic headaches for eight months. Medical treatment, both homœopathic and allopathic, was without success. Her physician finally sent her to the dentist. Dr. Herms extracted one tooth and filled all the cavities in the other teeth, which also cured the neuralgia.—*Dr. Herms, Ref. Wienerzahnarzt. M.-Sch.*

New Observation on a Replanted Tooth.—On the 29th of September, 1896, came to me a college boy, requesting the removal of a tooth which was too short and to substitute an artificial one. This tooth was replanted some years ago. In fact, the tooth was $3\frac{1}{2}$ min. (about $\frac{1}{8}$ inch) too short. Since the replantation I had observed this tooth constantly and for some years noticed the progressive shortening. This shortening, as one can see at once

by looking into the mouth, is the result of the constant growing of the alveolar process and the other teeth, while the growing of the alveolar process about the replanted tooth has stopped. At the same time all the other teeth are protruding further out from the bone while the replanted one holds still the same position as all the other teeth had seven years ago, the boy being then 12 years old. On account of this observation, the whole history of the tooth calls for special interest. My journal gives the following record :

October 26, 1889.—Victor K., scholar of the High School. had his first left upper incisor knocked out in the turning school. This happened on the 23d of October, therefore three days ago. Being asked where he had the tooth, the patient referred to the school yard. I advised him to go and look for the tooth and then to come back.

October 27.—The tooth, which had been found in the sand, was kept for a quarter of an hour in a sublimate solution of 1:200, then washed and brushed in a 1:600 solution and finally rinsed in a 1:2000 solution. The root canal was enlarged, beginning at the apex ; and the contents found dried up. The canal was filled with gutta-percha. The periosteum was removed only on such places where it was particularly dirty and destroyed ; the major part I tried to spare. After this manipulation, the tooth again was placed at first in a strong and then in a warm diluted sublimate solution. The strong solution was for sterilization, the weaker one to remove the larger portion of the poison. In the meantime, the alveolus was cleansed of the coagulated blood, somewhat enlarged (which naturally was very painful). In the four days which had elapsed since the accident occurred, the alveolus had become materially smaller. Not wanting to cut too much of the bone away I had to enlarge the alveolus by strong pressure upon the tooth during the replantation. By this pressure the gums near the border line became real white and further up blue. The tooth was kept in place by the rubber-dam splint of Herbst.

October 28.—The left central incisor which was slightly injured by the accident pains more than the replanted one. The latter feels very solid. There has been quite a swelling this morning ; at present very little can be seen. The rubber-dam splint is removed.

October 29.—The implanted tooth is somewhat protruding ;

painful to the touch. The left central pains still a little. Swelling has still more subsided. As the tooth became painful after the removal of the splint I applied a new retention-splint, this time using oxyphosphate of zinc, the same cement which is used for filling teeth. With this cement I covered the replanted tooth and its neighbors.

October 30.—Patient enters, saying: That has done very nicely! The tooth is not near so painful and the lower teeth do not strike so much any more.

November 5.—The cement splint is removed. The tooth is still a little too long and somewhat loose. Patient is well satisfied.

November 6.—Even now, as the splint has been removed, the tooth seems to have become firmer.

November 9.—Tooth still somewhat loose.

November 18.—Still less.

November 30.—Quite as solid as the other teeth. Patient claims to have received a blow a few days ago which loosened the tooth somewhat.

Later on I saw the patient every year once or twice for examination of his teeth; about the replanted tooth I did not keep any further record, only once, February 10, 1891, which was a year and a half after the accident. It reads: As good as the others. I remember the visit of a colleague at the time when the patient was present for the examination of his teeth. I introduced him and asked him to look for the replanted tooth. I do not remember any more if he did succeed. Anyway, it was sure that there was very little, if any difference, between the replanted and the other teeth. This is more particular to be emphasized in regard to the length as it still says at November 5, 1889: The tooth is still a little too long. From that date to February, 1891, the neighboring teeth had overcome this superfluous length. For a few years everything seemed to go beautifully. Later on I noticed the teeth next to the replanted one becoming longer. At first it did not disfigure but later the appearance became unsightly. By speaking and laughing the short replanted tooth conveyed the idea as if there was an empty space in its place. To remove the deformity, I had spoken on some former occasion about an artificial crown which could be placed there in case of necessity; and to have this done, the patient came to me on September 29, 1896.

Although I felt sorry about the tooth I did not want to

attach a piece of porcelain. I did not like the resulting seam in the work. I preferred to cut the crown off and to put a pivot-tooth in its place. I was rather astonished to find the crown breaking away easily; it seemed as if the tooth was crushed by the forceps. I did not expect to find the resorption of the dentine and of the secondary bone to reach down to the crown. If one inspects the cut-surface near the crown, one may notice, even microscopically, the replacement of almost all the dentine by bone; only a small septum near the labial side beneath the enamel being left. Near the lingual surface the cutting forceps had crushed the bony mass which had replaced the root. The cutting surface near the root could not be seen very clearly, it bled. There is no doubt that two-thirds of the root have been replaced partly by compact and partly by spongy bone.

When I looked for the gutta-percha with which I had filled the root-canal at the time, the patient stirred as if I had touched the pulp. If I had not been acquainted with Scheff's investigations in regard to the retention of replanted teeth, and if I had not have known that I filled the root-canal with gutta-percha at the time, probably I would have been deceived in the same way as many a practitioner in former years, who maintained the opinion that the pulp regenerates itself. But now I took it for granted that the pain experienced by the patient was the result of my touching the bone marrow. I removed it with a spoon-shaped excavator and prepared the canal for the insertion of the crown. This was encountered with some difficulty on account of the profuse hemorrhage, but nevertheless, no inflammation followed.

The next day I fastened the pivot tooth with cement but the whole operation did not leave the impression of being permanent. I feared the neighboring bone tissue would expell the foreign body. This occurred quicker than I presumed. On October 24, 1896, the patient returned and complained about the tooth being loose. The only chance I had now was to construct a tooth on a rubber base.

On January 3, 1898, again the patient returned for examination of his teeth. Of the root of the replanted tooth nothing was left. The gums covered the bone so nicely as one finds it some years after extraction. Without doubt, the last remnant of the root had been absorbed in a year.

If such a case should present itself again it would be more

advisable to grind away the cutting surface of the too short teeth and to replace them with a piece of porcelain. The patient could *dispense for some years with the rubber plate.*

By the by, I would like to report about another replanted tooth of which I hoped that the pulp would regrow again. The case is reported in the *Monatschrift für Zahnheilkunde*, 1889, page 461. I replanted the right upper lateral incisor of which the root was only half developed in a boy nine years old. The replantation took place on Sept. 28, 1898. On Nov. 17th of the same year I find this report in my journal: The tooth is correct and solid in its place. As the pulp at the root-end measured about 2 min. in thickness I had some hope of regrowing. After three years the tooth came out. The crown and a very small lamina of the root was all that was left. Till then I favored the opinion that under very favorable circumstances the pulp of a replanted tooth might regrow again and that a young tooth might develop its root in full. But since those experiences I have changed this preconception. I do not doubt that in all cases in time an absorption of the pulp tissue will occur and the root-canal will be filled with granulation-tissue which changes to bone.—*Jul. Parreidt, Deutsche Monatschrift für Zahnheilkunde, March, 1899.*

ALL SORTS.

Dentists and their Instruments.

In regard to the sterilization of instruments, we desire to state that the better men in the dental profession are no more lax than certain specialists in the medical profession. This is not urged as an excuse, but simply stated as a fact. The writer has been in the operating rooms of oculists, artists, otologists and laryngologists in this and other cities. He has seen mouth mirrors, probes and other instruments used in one nose and throat after another with only a superficial rising in carbolized water and drying on absorbent cotton intervening. That is not sterilization. The throat specialist sees ten syphilitics where the dentist sees one. A prominent physician once told the writer that some twenty-five per cent.—perhaps it was more, certainly not less—of those who applied at the free laryngological clinics at the Medical College of Indiana were tainted with syphilis, and expressed surprise at our belief that not five per cent.

of those who apply to the Dental College Infirmary for services have visible evidences of the disease in the oral cavity. His error lay in not taking into consideration the fact that *all* indigent syphilitics are likely to apply to the Free Dispensary for aid. The very existence of the lesion in the mouth or throat would cause them to do so. But syphilitic lesions do not actively affect the teeth. On the contrary, the teeth of syphilitics seem to be usually unlikely to decay. So it is only the rare cases in which the syphilitic patient is afflicted with toothache that reach the dental college infirmary. Again, the medical college clinic is drawn, as a rule, from the very poor, and often from the depraved, debased lower strata of society. This is not true of the Dental College clinic. To have any operation but extraction performed in the mouth argues a certain amount of personal pride that is seldom present in the breast of the applicant at the medical college clinic. The dental college clinic is composed very largely of small wage-earners—mostly women—and these have not acquired the syphilitic habit to a great extent. One of our brightest physicians once told us that “everybody had syphilis.” Well, perhaps they have. On some it “takes” more than it does on others, though.

However, the fact, if it is a fact, that the members of the dental profession do not meet with as many cases of secondary syphilis as our brethren in the general practice of medicine imagine we meet, or the fact, that the better class of dentists exert as much care in sterilizing their instruments as the nose and throat specialists employ, does not palliate the obvious carelessness of the majority of dental practitioners on this score. There are grounds for this criticism, undoubtedly. The bulk of the dental profession are lax in this regard. The reason for this failure to properly sterilize their instruments are as set forth by Dr. W. in the clipping to which we have called attention. For several years the writer had all the syphilitic patients of two of our best physicians referred to him for the care of their mouths during their treatment by the general practitioner. A separate set of all-metal scalers, excavators and pluggers were employed in these and all other cases in which a syphilitic taint was suspected. After using, the instruments and napkins were boiled, the cuspidor sterilized and all necessary precautions were taken. But not all practitioners are provided with this extra set of instruments and not all syphilitics come to us accredited as such, and it is in the unrecognized, unsuspected cases that the danger lies.

To remedy this condition of affairs requires either that all instruments shall be made so that they may be boiled, or that some other efficient method of sterilization which will not mar the present makes of instruments be devised. If boiling is resorted to, the handles of all excavators, scalers, pluggers and burnishers should be of steel or aluminum, and all

rubber polishing cups, polishing brushes, rubber dam and similar articles should be thrown away after having been once used. A more convenient method, for the dentist, would be a formaldehyd, or other sterilizer in which the instruments might be placed after washing, until surgically clean. Either method necessitates two sets of many instruments. The lack of an inexpensive and convenient method of sterilization has operated more to prevent improvement in this respect than anything else. This is a matter requiring agitation.—*Editorial Indiana Dental Journal.*

Replacing of Porcelain Facings.

The breaking of porcelains in bridges that are set is one of the things we have to contend with, and the repairing of porcelain is something which, if I had time, I should like to talk about. I have constructed an instrument for dilating a tube. A pin on the teeth may be elongated. It is often the case pins are not long enough, and even the longest pins are frequently found to be a little short and give us a good deal of trouble. Anyone who makes bridge-work for a number of years will find he is annoyed by having porcelains come off, and to replace porcelains successfully is quite an important thing. To elongate these pins, take a tube of platinum with a pure gold upon the inside. In your own laboratory you can make the platinum and gold yourself. Take a piece of platinum, we will say No. 28, and pure gold 30, and preferably in size about that wide (indicating about an inch, or a little more); put the two pieces under the blow-pipe and make perfectly clean, or you might immerse in alcohol, then lay the platinum on to the gold, having set the rollers so that 28 will just come through the rollers easily; then grasping the gold and platinum with tweezers, hold it over a Bunsen burner until it is a white heat and pass quickly through the rollers. It is simply annealing; but if conditions are right passing through the rollers, you will get perfect welding, perfect interlocking of the crystals of gold and the platinum, and you will get a piece of platinous gold in that way. Cut off a strip and you can very readily make a tube to fit the pin. Then with a blow-pipe and a tiny piece of pure gold, unite the ends. Having placed the two tubes on the pins, invest and put under the blow-pipe, after heating gradually, and the pure gold will unite on the inside with the platinum pin and you will have two elongated tube pins. You drill your holes through the bridge to accommodate these pins and then upon the under side counter-sink it and the tubes passing through may be ground off even with the general surface. I have constructed a tube dilator. It has a sole leather pad (on one side for contact with the facing),

which may be made plastic by soaking it in water, or it can be covered with rubber and there is no danger if properly handled. Placing the dilating punch-like end into the tube, it can be dilated so as to fill the counter-sink portion of the gold. A small-headed gold pin may then be made and cemented in, if it is thought best; or the space may be filled in with gold foil. In that way it seems to me a bridge may be repaired easier than in most other ways.—G. W. MELOTTE, *Dom. Journal*.

An Ideal Method in Crown and Bridgework.

The following mode of procedure in making a bridge or gold crown has been followed by me with a great deal of satisfaction.

My method consists in making metal posts for the bands of the abutments to be imbedded in the cast or model made from the impression. Take, for instance, a case, say from the 1st bicuspid to the 2d molar. The teeth or roots forming the abutments are ground as usual and the measurements taken.

The bands are now adjusted making no attempt at contouring, merely see that they fit the roots snugly. An impression is taken with the bands in place; also an impression of the antagonizing teeth or a wax bite, the rest of the work is done in the laboratory as follows:

Remove the bands from the impression and fill the same with moldine, pressing it in close contact between the thumb and forefinger. Now remove the moldine, say to the depth of 1-16 of an inch from the gingival portion of the band, cut a piece of ordinary writing paper $\frac{3}{4}$ inches wide by 3 inches in length, wrap this paper around the band and place the ends in the jaws of a vise, drawing the paper snugly around the band.

Pour this tube or mold with Melotte's metal, you have now the neck of the band imbedded on a metal post. Remove the band, also the moldine from the band and replace again on the metal and return the same with the metal attached accurately in the impression. Pour as usual, the result being a cast of the teeth in plaster with the bands on the metal posts. The bands can now be removed at will any number of times and accurately replaced without injury to the cast. You can also (providing the teeth have been ground sufficiently) contour the bands to correspond with the adjacent teeth. The caps for the bands can now be soldered, the dummies set up and articulated, and the whole piece removed from the cast, invested, and soldered; after this is done it can again be placed on the cast and proven.

Should one of the abutments be a post crown, such as a Richmond, the procedure is the same, with the exception of wrapping the post first

with thin annealed copper or tin foil. The paper is then wrapped around the base, the four ends being brought in the vise and the metal poured as in the case of a band. No moldine of course is necessary. The post with the base can now be removed, replaced and returned with the metal attached in the impression.

In the case of an accident during the soldering process, or otherwise, a piece of work involving a great deal of time and patience may be ruined. The model having been destroyed, of course the work would have to be done over again.

As the model in my method has not been destroyed, it permits of the parts being readjusted and soldered as before.

I claim also for this method perfect results with little or no pain to the patient, as the bulk of the work is done in the laboratory.—G. E. STALLMAN, *Pac. Med. Dent. Gaz.*

Use of Tin-Foil in Model and Bite Impressions.

Now and again, when taking impressions for regulating cases, crown- and bridge-work, or for small plates, etc., it is more convenient, and greater accuracy is attained, by allowing the patient to bite into the impression so as to secure at the same time and in the same mass of impression material, a mould for the model and for the occluding teeth. Time and effort is saved, and the risk of error in adjusting a separate impression of the occluding teeth to the model is avoided. It has the advantage, however, when, as is frequently the case, the upper and lower teeth meet in actual contact, that there may not be enough substance of impression material to hold that which is outside the teeth to that which is within, or, the two impressions may so completely coalesce that it is difficult, and at times impossible after they are filled with plaster to separate the two casts so as to preserve accuracy at these points. This may be effectively overcome by inserting in the impression material before placing it in the mouth, at the point about where the teeth will meet, a sheet of thick tin-foil, or "tea-lead," or the thin metal such as is used to cover the face of models used in vulcanite work. This, while quite efficient in separating the impressions of the upper and lower teeth, is sufficiently thin and pliable not to affect their accuracy. In some cases it may be more convenient to place a mass of impression material upon the upper and lower teeth, lay the tin-foil upon either one, and direct the patient to close the jaws firmly. For crown- and bridge-work, it is convenient to keep on hand blocks of impression material of suitable size, made of two layers separated by a sheet of the foil.—*International Dental Journal.*

Treatment of Porcelain Facings to Prevent Fracture.

Porcelain facings in soldering require as much intelligence in handling as does a glass goblet or porcelain dish in washing. A dentist who invests a crown or bridge, and as soon as the investment is hard enough to handle places it over the gas stove and puts on a full blast of heat, can feel himself one of the chosen few if he does not always have a broken facing.

The contraction of platinum being more rapid than porcelain in cooling, requires only one consideration in soldering, and that is that the flame leave the point upon the incisive edge where the platinum laps. This insures equitable cooling throughout the tooth, and does away with those minute fractures so often seen upon the incisive portion of the incisors and cuspids when backed with platinum, and so rarely seen on the same teeth backed with gold.

Dry the investment slowly until all traces of moisture are driven off, then increase the heat until the investment is as hot as it is possible for it to get over the gas heater, transfer to an asbestos block, solder, and cover with another asbestos block, and leave until cold.

The higher the grade of teeth used the more likelihood of fracture when improper methods are employed, but proper observance of the method of procedure as heretofore set forth will insure absolute success in every instance, and the satisfaction of feeling that the dangers of subsequent breakage after final insertion in the mouth are reduced to a minimum by the use of high-grade teeth will more than compensate the practitioner for the time consumed in the observance of these rules of detail.—DANIEL FREMONT MCGRAW, *Cosmos*.

To Transfer the Crowns from a Vulcanite Plate to Metallic Base Without Taking an Impression of the Mouth.

Proceed as follows: Cleanse the plate and invest the lingual surface in plaster, and build up a rim around it about half an inch above the edge of the rubber. Let the rim flare a little toward the top. Trim it level, and place on it an iron band half an inch wide and of suitable shape. Unite the band to platter rim with plaster. Place this in such a position that the top of the band will be level, and pour into it an alloy made of bismuth 8, tin 3, lead 5, and antimony 2, called Hodgen's Die Metal, or an alloy made of bismuth 48, cadmium 13, and tin 19. I use the latter formula. Whatever alloy is used must melt as low as 212° F. Let the alloy rise perceptibly above the margin of the band. Chill and separate. Then take a vulcanite flask with the band, and fill it to within

one-fourth of an inch of the top with modelling compound. Immerse this in boiling water till it is soft, and press the die into it down to the lower edge of the band. Chill and separate. With this die and counter proceed to swage gold or aluminum. For the case in hand we will take aluminum, 18 or 20 gauge. Anneal the plate by holding in a Bunsen burner for thirty seconds before shaping it to the die with the mallet. The annealing must be repeated as often during the swaging process as may be necessary to keep the plate in working condition, taking care always to cleanse the plate of all adherent particles of die-metal before annealing. It is well to place a piece of rubber-dam between the plate and the die while shaping with the mallet, to prevent the unnecessary bruising of the surface of the metal. Having shaped the plate approximately with the mallet and trimmed the edge, swage lightly at first, and as wrinkles form in the margin smooth them out with the mallet, renewing the counter as often as it is necessary. As the work progresses, heavier blows may be employed until the work is completed. An aluminum plate is easily swaged with one die and three or four counters made of modelling compound.

Set the crowns half their length in plaster, and attach to the lower half of an articulator. Pour plaster into the palatal portion of the denture cast and attach to the upper half of the articulator. Open the articulator, and remove the plate from the cast. Remove the crowns from the vulcanite, and put them in their respective places. Having placed the plate on the die and spurred it, put in on the cast and close the articulator. If the crowns interfere with the plate, grind their upper ends till they do not interfere. With a minim drop-tube flow water about the crowns till the plaster is wet, and then with wax and a hot spatula carefully unite the upper ends of the crowns without lifting them from their positions in the plaster. Place a layer of wax on the spurred portion of the plate, warm the wax, and close the articulator. With a hot spatula unite all the crowns firmly to the plate, keeping the plaster wet so that the wax will not adhere to it. Open the articulator and finish waxing up preparatory to flasking.—A. C. DICK, *Cosmos*.

BRIEFS.

Beta-eucain is useful to paint the gums before setting a crown—ten per cent solution boiled.—*Dental Review*.

Impression of Roots.—To get a perfect impression of the end of a root, place a wooden peg in the root and pack guttapercha around it,

forcing the gum out of the way, taking an impression with pin in place, which comes away with the impression.—*American Dentist*.

Impracticable Bridge Cases.—Too many men attempt impracticable cases,—*e. g.*, attaching to loose or diseased roots or teeth, bridging too wide spaces, etc.; and it is this dishonest work that leads to the condemnation of bridge-work, and, in many cases, ought to be considered malpractice.—*F. A. Green, Cosmos*.

Why Bridges are Troublesome.—Bridges as usually made are troublesome because they furnish place for the lodgment of food particles, and if they press on the soft tissues they are liable to irritate them. I think that a bridge to be sanitary should never come into close contact with the gum.—*J. W. Beach, Cosmos*.

Solutions.—To make a solution of a given strength, multiply 456.5 grains (approximately 455 grains) by the percentage of solution required. For example: If you wish a 4 per cent solution, multiply 455 by .04 which gives 18.2 grains to the fluid ounce. For a 20 per cent solution, multiply 455 by .20 which gives 91 grains to the fluid ounce, etc.

Second Soldering.—Place a piece of lower karat solder than was used on first soldering, in mercury until the surface is slightly amalgamated. It will then flow very readily, while the appearance of the finished piece is not injured, as the mercury is sublimated in the heating, leaving the finished piece as it originally was.—*American Dentist*.

To Remove Plaster from Vulcanite.—To remove plaster from vulcanite, saturate a pellet of cotton with strong cider vinegar, and rub the surface coated with plaster, and all traces will be removed. I have tried several things appearing in dental journals to my disappointment, until the above proved most effectual.—*H. C. Heady, Western Dental Journal*.

Cause of Failures in Artificial Teeth.—First and foremost is improper articulation. There are more failures from this cause than any other. The plate may fit snugly, adhesion be strong, everything right until the jaws are closed and then the plate is displaced. Too much care cannot be taken in the final adjustment of the teeth.—*L. P. Haskell, American Dentist*.

Antikamnia for Toothache.—It has been suggested that if a five grain tablet of antikamnia be crushed to a powder, and the powder put, by means of a moistened pledget of cotton, into the socket of a tooth giving pain, the pain will be relieved. The same means are also recommended for an aching tooth, by placing the powder within the cavity of decay.—*T. F. Chupein, Dental Office and Lab*.

Where Crystal Gold is Indicated.—The places where crystal gold is indicated are in starting fillings in difficult cases, and in large, open cavities easy of access, where the gold may be conveniently laid on in regular arrangement and condensed under the eye of the operator. It should not be employed for filling undercuts or in remote positions in cavities on account of the tendency to bridge.—*C. N. Johnson, Cosmos.*

Replacing Countersunk Teeth.—I think I have been quite successful in replacing countersunk teeth by the following method: Drill a hole through the plate nearly as large as the tooth, countersink well, wax in the tooth, then invest so as to pack from palatal side. The plate is not materially weakened and does not show repairs. Any loss of rubber can be supplied.—*W. B. Kelly, Cosmos.*

How to take Impression of Isolated Teeth.—When taking impressions of isolated teeth in plaster of Paris, we improvise an impression tray of a piece of tin. The tin plate is cut in the form of a half circle, and when bent, forms a tray like a small funnel without the spout. Into this the plaster is placed and the impression taken. A piece of paper is wrapped around this impression several times and plaster of Paris poured into it.—*T. F. Chupein, Off. & Lab.*

How to Test for Acidity of Saliva.—In the study of the case of acidity of saliva it is of prime importance to obtain the reaction of the secretion, by litmus paper, as it issues from the salivary ducts, before it can mix with the materials contained in the mouth. As many cases of acidity of saliva are due to decomposing particles of food, all that is required to produce a normal condition is the observance of cleanliness, and perhaps, a mild antiseptic wash.—*H. Boom, The Dentist.*

How to make Mouldine.—Mouldine may be made by incorporating glycerine with finely powdered Fuller's earth. The glycerine is added a little at a time while the earth is in a mortar, the incorporation being effected by grinding with a pestle. It should be made into a mass the consistency of putty. In winter it gets quite hard and stiff, but it may be brought to its proper working consistency by heating it and working in, while warmed, a little more glycerine.—*T. F. Chupein, Off. & Lab.*

The use of Wire for Thickening and Strengthening Platinum Plates.—The use of wire for thickening and strengthening platinum plates is in the author's opinion much more satisfactory in its results than padding the model to turn up the edges of the plate. In the first place, it makes a much neater job; secondly, it admits of the plate being relieved, if necessary, without destroying the edge finish, and thirdly, it simplifies the swaging of the platinum plate and gives better results.—*H. Rose, Brit. Jour.*

A Warning when Administering Anesthetics.—R. Lehmann states (*Sem. Med.*, November 2,) that if the patient keeps his eyes completely or partially open during the chloroform narcosis, and opens them whenever you try to close them, you can expect some accident, more or less severe. This phenomenon was noted twenty-one times in 329 anesthetics, and in each one there was either continuous vomiting, arrested respiration, peculiarly protracted agitation, or asphyxia and syncope, requiring artificial respiration.

How to Pack Pink Rubber.—Pack the pink rubber well between the teeth, using a thin instrument to do this. Cut the gates or outlet for any excess of rubber, *entirely on the BACK of the flask, none whatever on the FRONT.* Boil the flask well, at least ten minutes, and *screw down the two front bolts first.* When the front part of the flask is brought together then screw down the back nut. Using these precautions, we cannot recall a single occasion where the red or black rubber has cropped through to spoil the effect.—*Theodore E. Chupein, Office & Lab.*

Fixed Bridge-work Defective.—Certain defects are inherent in fixed bridge-work, and cannot be eliminated, however well the piece may be constructed; it may conform to true mechanical principles, be correct from an æsthetic point of view and be within its proper sphere, yet it is a failure in some measure, for in the very nature of things it cannot fulfill all the requirements of an ideal bridge. In the above references to bridge work, the ordinary is meant, one continuous piece terminating with a crown at each end, the fixed or immovable bridge.—*T. E. Turner, Review.*

Best Crown for Anterior Teeth.—Probably the best crown for the six anterior teeth is the Richmond removable crown with a split pin, by which the crown can be made tight again if it should become loose. If this crown is properly made, great care being given to the minute details, I am sure it will do all that is expected of it, being easily removed, yet perfectly rigid when in place. For the molars and bicuspid, the telescoping crowns are among the best forms. They must be accurately made, and the crown should be of some length, not too short.—*T. E. Turner, Review.*

The size of Successful Bridges.—A successful dental bridge should not be longer than three teeth, between the abutments, and if of that length the abutments should be of the best. The third molar usually is a poor foundation, but cases present themselves where it is necessary to use these teeth. If so the crown should be very carefully fitted, and not go too far under the gum margin, as the tooth makes a very abrupt turn

under the margin of the gum, and the gold would begin to leave the tooth beyond that point and act as an irritant and soon destroy the tooth.—*Dr. Green, Cosmos.*

Where to Band and Crown in Bridge-work.—In constructing a dental bridge to supply the place of the bicusps of the upper maxilla, if the case is in the mouth of a man with a moustache, where exposure of the gold will be no objection, I prefer to band the cuspid and crown the molar with an all-gold crown. And in the case of the molar, if it is one of those cases where the tooth has to be ground very much to make the sides parallel, I prefer to grind the tooth but part way up the sides, and let the crown extend but part way, or not quite to the bulge of the tooth.—*Dr. Green, Cosmos.*

Arsenical Poisoning Cured by Orthoform.—I had a case of acute arsenic poisoning with the conditions present so familiar to all. With spoon excavator removed the blackened gum tissue, syringed parts with warm antiseptic solution, soaked gum and surroundings with dialysed iron and applied twenty-five per cent. unguent orthoform. The pain in this case was the severest I ever saw, and I must admit being astonished when the patient returned on the following day and reported that the pain stopped and had not returned. Relief came within twenty minutes.—*A. D. Kyner, Items.*

Matrix Material.—Some years ago I gave a great deal of time to finding some substance which could be used to make a matrix of sufficient strength which would yet not be so thick as to interfere with the proper adjustment, even where the adjoining teeth were in close contact. The result of my researches was the adoption of the thin rolled steel used by watchmakers to support the pendula of clocks. This is admirably suited to the purpose, and the manufacture of the matrices from it is very simple; any dentist can make them in his spare time, and keep a stock of them always on hand.—*L. C. Bryan, Cosmos.*

Self-Cleansing Space a Misnomer.—The so-called self-cleaning space is a misnomer, a delusion, and a most convenient place for the lodgement of food. It is almost, if not impossible to keep them clean. It may be possible, but I have yet to see one kept so. I think a bridge with these spaces is not so cleanly as a saddle bridge, but it possesses this advantage—you can look under it and see what is there. In some cases these self-cleaning spaces interfere very seriously with speech and are a great annoyance to the tongue, while for all the vile odors imaginable I have never found the equal of a recently extracted fixed bridge.—*T. E. Turner, Review.*

A Few Words of Caution Regarding Porcelain Fillings.—

Never attempt to put in a porcelain filling smaller than a pin head, as good edges will be difficult to obtain and the color will be lost.

In labial fillings make the cavities fairly deep, or the cement will shine through and ruin the shade.

In putting on a corner make the porcelain edge at right angles to the cutting-edge, or chipping will surely ensue. A bar of porcelain running into the tooth makes a much stronger anchorage than a platinum pin. The platinum may stretch, and certainly tends to weaken the substance of the porcelain.—*Jos. Head, Cosmos.*

Regulating Hints.—Take impressions of both arches in every case and set up models. If you expect to use a model for fitting appliances, take two.

Don't try to rotate a tooth in a day or two. You may wish you had never attempted the case.

Don't urge a patient to have the regulating done because it is so easy, don't hurt, etc. The patient may convince you before you get through that you did not tell the truth.

Tell them the truth according to your previous experience.

Always get the mouth in good condition before attempting the work.—*E. D. Brower, Dental Century.*

A Quick Method of Making an Artistic Solid Gold Dummy.

—Select plate tooth suitable for case, grinding slightly if necessary for perfect occlusion. Then take impression of buccal surface of tooth with Melotte's compound; run metal in ring. This gives metal die of buccal surface. Then make die of occlusal surface in same manner. Strike up gold plate 22 k., 28 to 30 gauge from this die for separate parts which will fit accurately on model. Burnish tightly to place over model, placing a little hard wax over joint to hold parts in place. Remove plate tooth, filling inside shell with wax to hold in position. Remove outside wax, invest and solder with 20 k. solder. Then fill shell with 18 or 20 k. solder and finish to suit the bridge. This dummy is recommended to be placed upon bridges where the bite is short.—*F. E. Moody, Review.*

A Most Satisfactory Manner of Treating Gold Foil.—A most satisfactory manner of treating gold from the time it reaches our hands till it is carried to the tooth is to first subject it to the influence of ammonia gas by placing in a small porcelain receptacle a pledget of cotton saturated with aqua ammonia, and setting this in the same drawer with the gold, leaving the box or bottle containing the pellets open, so that the gas may readily act upon them. The pellets are thus rendered uniformly soft, velvety, and manageable. They are absolutely non-cohesive. They

may be shaken or rubbed together *ad libitum* without one pellet, even in the slightest degree, adhering to another. When the filling is to be made they should be transferred to the Custer annealer and the current turned on, the result of which will furnish a series of pellets each in its behavior precisely like its fellow. Gold treated in this way has a beautifully soft working quality, devoid of harshness, but capable of perfect cohesion and density under the impact of the plugger.—C. N. Johnson, *Cosmos*.

New Publications.

A MANUAL OF COMPARATIVE DENTAL ANATOMY FOR DENTAL STUDENTS. By Alton Howard Thompson, D.D.S., Topeka, Kas., Professor of Dental Anatomy, Human and Comparative, in the Kansas City Dental College, Kansas City, Mo. Philadelphia: The S. S. White Dental Mfg. Co., Pub., 1899. Price \$1.50.

It cannot be denied that the study of the forms and functions of the teeth of animals is a great aid in the more thorough understanding of the forms and functions of the teeth of man. There has been a crying need for a concise treatise on comparative dental anatomy, and we are glad to see the book brought out by one so well informed on this subject as Dr. Thompson.

The general works on the subject are not adapted to the needs of students of dentistry, so this work was prepared specially for students, at the request of the Faculty Association, and the sifting out of the special matter here presented from the mass of material bearing on the subject in the literature of zoology, has been, the author states, the work of years and represents the gleanings from many fields. Its matter and methods have been slowly evolved through the needs of the work of teaching this branch in the class room. The book is concisely written and the subject treated in a progressive manner, beginning with the lowest forms of life and leading up to the highest in regular gradation.

In Chap. I, the subject of general zoology and comparative anatomy are considered. (1), The animal kingdom, (a) invertebrates and (b), vertebrates. (2), invertebrates and vertebrates; how distinguished, etc. (3), sub-kingdom of invertebrates. (4),

sub-kingdom of vertebrates. (5), what comparative anatomy is. (6), leading principles of comparative anatomy. (7), comparative dental anatomy. (8), how the teeth of man have been developed.

Chap. II treats of the teeth in general—origin, tissues, functions, tooth forms, etc., and following this is a list of terms and definitions proposed and adopted by the American Dental Association for use in dental anatomy. While not absolutely necessary, we believe it would be advantageous to have the pronunciation marks included.

Chap. III treats of the teeth of invertebrates.

Chap. IV—The teeth of vertebrates.

Chap. V—The teeth of fishes.

Chap. VI—The teeth of reptiles.

Chap. VII, VIII—The teeth of mammals.

Chap. IX—The teeth of the higher apes and man.

A list of questions is given at the end of each chapter.

The book contains 176 pages and about 40 photo-engravings. It is interesting from beginning to end, because just enough of each subject has been given to keep the interest awake, and yet it gives a comprehensive knowledge of the subject treated. All elaborate and cumbrous details have been omitted.

The author and publishers are to be congratulated and the book should find a large sale, not only among students but general practitioners as well.

METHODS OF FILLING TEETH. An exposition of Practical Methods which will enable the Student and Practitioner of Dentistry successfully to Prepare and Fill all Cavities in Human Teeth. By Roderigues Ottolengui, M.D.S. Revised and enlarged, pp. 219, with 273 illustrations. Philadelphia: The S. S. White Dental Mfg. Co., 1899. Price \$2.00.

There are probably few dentists who are not at least somewhat familiar with this excellent work on methods of filling teeth.

In this, the second edition, the author has thoroughly revised wherever revision seemed necessary, and methods which have been superseded by better ways have been culled out and considerable new matter has been added.

The book does not contain the author's ideas and methods

alone, but such other methods as have been found to possess merit.

It is a thoroughly practical work and covers all classes of fillings and conditions usually met with in practice.

It is one of the series of text-books adopted by the National Association of Dental Faculties.

Beginning with the general principles involved in the preparation of cavities—removal of decay, shaping, etc., the author takes up the general principles in the filling of teeth. Here he presents methods of keeping cavities dry, uses of clamps and separators, and the uses and dangers of matrices. The uses of various filling materials, and method of manipulation cover forty pages, after which the subject of contouring is considered. The relative values of contour, and flat or flush fillings—the V-shape space in the relation to the gingiva—restoration of superior lateral incisors—slight contours—regulation of teeth by contour fillings—true contouring—treatment of masticating surfaces—use of screws, are ably dealt with and a number of cases from practice, requiring odd methods, are cited.

In the chapters on special principles involved in the preparation of cavities and in the insertion of fillings, the author has taken up specifically a sufficient number of typical conditions, so that with the description of methods necessary, the student may have the theoretical knowledge which will enable him intelligently to undertake whatever may come into his hands.

The last chapter treats of methods of filling the canals of pulpless teeth—a study of tooth-roots—methods of gaining access to and preparing canals—methods of cleansing root canals—when and how to fill root-canals.

The text is concisely written and describes so well the various phases of operative procedures that it is a most valuable work for every dentist.

THE AMERICAN DENTIST AT HOME AND ABROAD, is a new monthly, 16-page journal, edited by Dr. C. R. Hambly and published by the American Dental Publishing Co., Bradford, Pa.

The first issue contains an article by Dr. Haskell on Failures in Artificial Teeth, and Dr. Hambly contributes an article on National Prosperity in Its Relation to the Practice of Dentistry.

One page is given to practical suggestions, and the remaining pages are filled with current news of interest to dentists. The price of the journal is 50c. a year.

SOCIETIES.

Michigan Dental Association.

THE next annual meeting will be held in the city of Port Huron, Mich., July 11-12-13, 1899.

M. B. DENNIS, Secretary.

Northern Ohio Dental Society.

Do not forget the meeting of this society at Cleveland, May 16-17-18, 1899. A most excellent program has been prepared and the meeting promises to be one of the best ever held.

Nebraska State Dental Society.

THE twenty-second annual meeting of the Nebraska State Dental Society will be held at York, May 16-19.

B. F. FISHER, *Cor. Sec'y*, Omaha.

Kentucky State Dental Association.

THE twenty ninth annual meeting of the Kentucky State Dental Association will be held at Mammoth Cave, Ky., May 16, 17 and 18. A cordial invitation is extended to members of the profession to be present.

For information address the Secretary,

J. H. BALDWIN,
307 W. Broadway, Louisville, Ky.

The National Dental Association.

COMMITTEE ON HISTORY.

EVERY dentist can assist the committee by answering the following questions:

1. Will you please name any books, pamphlets, manuscript reports, in fact any matters of interest you may possess, which, at the proper time, might be available for the history?

2. Will you give the names and addresses of any dentists in your vicinity who have written on the subject or are interested in dental history?

3. Should the proposed work, in your opinion, be confined to a history of the profession in America or should it be of dentistry from the earliest times all over the world?

4. As it is necessary for us to report on the probable financial success of the idea, would you be willing to subscribe, at the proper time, for a satisfactory history of the dental profession?

Send replies to:

CHARLES McMANUS, *Chairman*,

80 Pratt Street, Hartford, Conn.

The Revised and Complete Programme of the American Medical Association—Section of Stomatology.

Chairman's Address—Dr. G. V. I. Brown, Milwaukee.

The Human Face and Jaws as a Danger Signal of Systemic Defect or Disorder—Dr. J. G. Kiernan, Chicago.

Cocain and Eucaïn, Their Relative Toxicity—Dr. A. H. Peck, Chicago.

Epithelial Structures in the Peridental Membrane—Dr. Frederick Noyes, Chicago.

Infectious Ulcerative Stomatitis—Dr. John S. Marshall, Chicago.

Oral Surgical Operation, (with illustrations showing remarkable results)—Dr. G. V. I. Brown, Milwaukee.

Some Points on the Etiology and Treatment of Persistent Pyorrhœa Alveolaris—Dr. G. T. Carpenter, Chicago.

Interstitial Gingivitis, (so-called Pyorrhœa Alveolaris) giving the result of original work with large photographic illustrations showing the progress of the disease from beginning to the exfoliation of the teeth—Dr. Eugene S. Talbot, Chicago.

Syphilitic Infection from Dental Instruments, With Cases—Dr. W. L. Baum, Chicago.

Professional Education and Ethics—Dr. A. E. Baldwin, Chicago.

Neuralgias Due to Progressive Periosteal Necrosis—Dr. M. H. Fletcher, Cincinnati.

The Treatment and Positive Cure of Pyorrhœa Alveolaris in Connection With Restoration of Normal Articulation—Dr. W. G. A. Bonwill, Philadelphia, Pa.

Dr. Bonwill will hold a clinic independent of the meetings of the Section on Stomatology to those who wish to meet him.

G. V. I. BROWN, *Chairman*.

EUGENE S. TALBOT, *Secretary*.

Birmingham Dental College.

THE commencement exercises of the Birmingham Dental College were held in O'Brien's Opera House, on March 31st, 1899, at 8:30 P. M.

The address to the graduating class was delivered by Hon. Joseph H. Derrill of Thomasville, Ga.

The degree of Doctor of Dental Surgery was conferred upon seven graduates by T. M. Allen, D. D. S., Dean.

Number of matriculates for the session was 42; graduates 7.

OUR AFTERMATH.

ARRESTED AND FINED FOR PRACTICING DENTISTRY ILLEGALLY IN OHIO.—On Wednesday, April 19, 1899, C. E. Bigelow was arrested in Cleveland at the instance of Prosecutor Wood of Medina Co., and taken to Medina, where he had been doing dental work without a license from the Board of Examiners. He was found guilty and fined \$25, and costs, in all about \$50.

THE OHIO DENTAL JOURNAL.

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No. 6.

CONTRIBUTIONS.

Artistic Crown Filling.*

BY DR. E. O. BLANCHARD, RANDOLPH, VT.

EVERY dentist prides himself on his ability to place a nice crown filling in a molar, but who has not found such cases (generally, of course, the work of some other dentist, but *occasionally* our own) where decay has continued to work about the filling, evidently from some of the fissures which extend deep into the tooth between the cusps? Many of the posterior teeth which we are called upon to fill, present prominent cusps, between which the sulci penetrate very deeply, the enamel usually wrinkling in such heavy folds as to afford an excellent lodging place for food-particles and acidulated saliva, and these are usually allowed to remain until fermentation takes place. The chemical action thus induced penetrates and destroys the thin enamel at the bottom of the fissures, then attacks the dentine, and as this neat little operation is hidden and protected by the heavy folds just mentioned, extensive decay often occurs before it is detected.

It is an extremely difficult task to properly place a crown filling, even after all decay is carefully removed, the various fis-

*Abstract of paper read before the Vermont State Dental Society, Burlington, Vt., March 15-17, 1899.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

asures freely opened up, and the desired shape obtained, without allowing the material—whether gold or amalgam—to overlap the margin of the cavity, and especially to continue along the line of the fissures for some distance beyond the true edge of the cavity; consequently, a little barb or point is usually left extending along the bottom of the fissures for some distance beyond the true edge of the cavity and also beyond all signs of decay. By the action of mastication, or from other causes, the little barb or projecting finger of the filling is almost certain to become raised or started up from its bed where it was packed over sound tissue, thus affording a far better opportunity than ever for food and microbes to find secure lodgment, so a recurrence of the process of decay is, sooner or later, assured.

Now by what means can we overcome this difficulty, and otherwise improve this kind of work?

Perhaps I ought to be rather more explicit regarding my method of preparing coronal approximal or even simple coronal cavities, as herein lies one of the chief objects of this paper. I remove the overhanging enamel so far as desired with chisels, then run out into the fissures, opening them up freely, even to the extent of "extension for prevention," with dentate fissure-burs or drills; then with the use of stone drills I grind down into the fissures between the cusps, making moderately deep and concaved furrows. All the natural and normal sulci between the cusps are followed, and in the molars, if necessary, from buccal to lingual and from mesial to distal limits; also the disto-lingual sulcus of the superior molars are concaved and ground out until all the fissures and wrinkles are entirely obliterated, forming an open furrow in the place thereof. Therefore, as will be readily seen, an excellent margin is left, to which we can now grind down the filling with the same stone used in cutting out the trough, thus leaving a flush, smooth surface where tooth and filling join.

After removing decay, and-so-forth, I go around the entire periphery of the cavity with very sharp chisels, cutting off the edges of the enamel so as to remove all projecting corners, working the lines of the same into rounded curves so far as possible, leaving few straight lines and no acute angles. The cavity walls should be perpendicular from the bottom of the cavity to the periphery. The final cutting and shaping of the enamel walls should always be done with a very sharp chisel or an extremely

fine corundum stone, as the fissure-burs and drills are liable to split, rough up, or pulverize the edges of the enamel layers, so that no one could expect a filling to remain tight when packed against such a ragged wall.

Now, after a filling has been properly placed in a cavity prepared as above directed, extreme care being exercised in packing the edges properly against all the walls, etc., the process of finishing and polishing can be accomplished with some degree of satisfaction, for there is now little or no excuse for leaving an overlapping or imperfect edge, as we can distinctly see and know when we have worked the filling down to an even surface with the surrounding tooth, and nothing but solid filling is exposed to the wear and tear of mastication.

The use of this method of grinding the occlusal surfaces of the posterior teeth, is not recommended for deciduous teeth; for instance, if one is working for an uneasy boy, who is wiggling and twisting around until he gets his head into the cuspidor and his feet into your stomach while you are vainly endeavoring to keep a cavity dry long enough to get any kind of stopping in, does not tend to add any incentive to one's ambition to make and finish an extra fine filling; but for older patients this method will aid to secure the three requisites demanded of a filling which are strength, durability, and beauty, and which certainly are expected of an artistic crown filling.

Treatment of Deciduous Teeth.*

BY D. H. ZIEGLER, CLEVELAND, O.

WE are informed that a large number of dentists overlook the importance of filling deciduous teeth, as they are supposed to be lost early in life, but when we stop to think that the duration of temporary teeth is from five to eleven years, it stands to reason that they need the utmost care; this is especially true concerning the molars, and there are three principal reasons why they should be preserved:

1. To prevent the child from suffering pain.
2. To allow proper mastication of food. This is of extreme

* Read before the Wilsonian Dental Society, Cleveland.

importance, if children are prevented from properly masticating their food it cannot be transformed into such nutrient condition that it is taken up by the circulatory system and at this time of life it is necessary that nutrition exceeds the waste.

3. To preserve the fullness of arch for permanent teeth, early loss of deciduous second molar will allow the first permanent molar to move forward and occupy the place of bicuspid or early loss of deciduous first molar, will allow second temporary molar and first permanent molar to move forward, as the crowns of the temporary molars are much larger than the neck, caries of the approximal surface will allow them to crowd together, producing somewhat the same result, viz., a constricted arch, pointed arch, upper protrusion, or eruption of the cuspids inside the arch. Taking all these things into consideration it behooves us to exert all our skill in saving deciduous teeth.

Our text books teach us that they are subject to several diseases which affect the permanent teeth. The crowns may be the seats of deposits, rarely however of salivary calculi. They may be affected by mechanical abrasion, dental caries, acute diseases of the pulp and pericementum, and septic pericementitis frequently runs a chronic course.

Owing to the peculiarities of structure, the temporary teeth present features different from those of the same disease in the teeth of adults.

1. The dentin of deciduous teeth never possesses the high degree of sensitivity found in the adult teeth.

2. In acute affections of the pulp, the pains have less of a reflex character, being usually confined to the dental region, and the pulp pain is not so severe as in adult teeth.

3. The lymphatic connection of deciduous teeth is more free than those of permanent teeth, so that the lymph glands are often involved in septic absorption.

All therapeutic measures, both medicinal and mechanical, must be directed towards insuring non-septic retention of these teeth, until the permanent teeth are ready to take their place.

While it is true that pyogenic process may exist for a long time upon the work of a temporary tooth and its successor from all outward appearance is unaffected, but it is more than probable that its deeper histological structures are affected.

About the first operation we are called upon to perform is to

relieve odontalgia ; this may occur anywhere from two years up, and from this time on we can number our little friends among our patients, and in order to keep them our first duty is to gain their confidence. If you have once gained the confidence of a child you can rest assured that he will look upon you as a benefactor and friend. Above all things never deceive them, do not let the child detect you hiding instruments. If they arouse his curiosity show them to him and explain their use. If the child is very timid examine the teeth while seated in its parent's lap, clean out cavity with warm water and dry and apply some medicament to relieve pain, oil of cloves, campho-phenique, etc.

Fletcher's Carbolyzed Resin is considered one of the best preparations for the treatment of deciduous teeth, it consists of carbolic acid $\frac{3}{4}$ j, resin $\frac{3}{4}$ j, chloroform $\frac{3}{4}$ ss, this acts as an anodyne and applied on a pellet of cotton allays pain, and the resin hardens and forms a temporary stopping which will stand mastication for several days, this can be renewed several times until the patient's confidence is gained before attempting a permanent filling.

This carbolyzed resin mixed with zinc oxide will harden under moisture and will last for several weeks. During this time we are educating our young friend for a good patient and with kind treatment, in a very short time he will submit to more tedious operations.

In discussing the different diseases, let us first consider :

GREEN STAIN.—This is usually confined to the cervical portion of the labial surface, it is very common upon teeth where remnants of Nasmyth's membrane persist, and is probably due to the growth of chromogenic bacteria in the remains of the enamel cuticle. It is usually preceded by a lack of oral hygiene, and should receive early attention, as it is believed that it causes decalcification of the enamel, it also furnishes a predisposition to diffuse and cause ulcerative stomatitis, this association is not clear to the profession, although it is of frequent occurrence, as the stains are insoluble in water, glycerine, alcohol, ether and chloroform. Tincture of iodine affects them but slightly, the only rational course in removing them is by means of abrasives. A mixture of pumice and glycerine, with rapidly revolving felt wheel, will accomplish the work and at the same time polish the enamel surface which is very essential.

ABRASION.—This may be caused by the active fermentative changes in the mouth, which cause an acid reaction, and through the combined action of the solvents and mechanical abrasion of mastication, the teeth may be abraded beyond the original limits of the pulp chamber, and the pulp still remain alive, this is brought about by secondary construction upon the part of the pulp, another noticeable feature in connection with these cases is that the teeth most abraded are often free from caries. The treatment consists in drying the surface and rubbing with fused Ag N O_3 , and prescribing an antiseptic mouth wash—listerine diluted one-half will answer very well.

CARIES.—The application of Ag N O_3 for arresting decay is considered especially useful in temporary teeth, many cases need no further treatment. Dr. E. C. Kirk advises the use of asbestos felt, saturated with a 40% solution of Ag N O_3 and keeping it on hand for use. He claims that the asbestos felt, should be heated with the blow-pipe before saturated, to burn out any organic material.

In selecting filling material for deciduous teeth, I will merely state that the dentist must use such that will be suitable for each case. Gutta-percha, cement and amalgam are the most applicable; gutta-percha for labial and proximate cavities. Zinc phosphate is probably one of the best, as it adheres to the walls of the cavity and will remain where no other material can, but if placed too near the pulp it may devitalize it. It must be remembered in excavating cavities in temporary teeth, that the pulp is much larger in proportion to the size of the crown than in permanent teeth, consequently accidental exposure should be carefully guarded against, as death of the pulp prevents normal resorption of the root and thus cause irregularities of the permanent teeth.

Caries in approximal cavities where there is a tendency for the affected teeth to press together and lessen the size of the arch. Bonwill advises to cleanse the cavities, apply Ag N O_3 to the dentinal walls and join the cavities with pink gutta-percha base plate, constant biting upon the gutta percha causes a separation and increase in the size of the arch, thus affording space for the permanent molars.

Cavities upon the distal wall of deciduous second molar require our eternal vigilance, for the erupting first molar has a tendency to crowd into the carious area, reducing the space for

the future bicuspid. These cavities should be given a retentive form and an amalgam filling inserted, leaving an exaggerated and rounded contour. If it is impossible to insert a contour filling, the decayed surface is cut away with a disk, leaving a shoulder-like projection at the neck, but this should only be done as a last resort, as we have previously stated, the temporary molars are usually decidedly bell shaped, and by sacrificing the crown we will narrow the size of the dental arch.

For pulps that are nearly exposed, apply Fletcher's carbolized resin over floor of the cavity, or tannic acid and glycerine, and fill with plastic material but do not exert pressure.

PULPS that are exposed should be devitalized, as capping is rarely successful, our friend Dr. Ambler tells us to use tannic acid and creosote, Dr. Clark L. Goddard recommends the following: arsenious acid, acetate morphine, pulv. opium, a a creosote, q. s. to make paste. He allows this to remain from twelve to forty-eight hours; claims that with this paste pulps can be devitalized without pain and that he has never seen any bad results from its use.

Prof. L. L. Dunbar says that two applications of aqua-ammonia will accomplish the same result, and there is certainly no objection to its use.

Among the most trying cases with which the dental operator is confronted, are diseases of the pulp and pericemental disturbances. It is rare that decided pain occurs before actual exposure of the pulp, and a majority of the cases with throbbing pain would indicate pulpitis, but cases may be seen at a stage where pain is caused by thermal stimuli, indicating hyperæmia. Water at 60° F., applied in drops to a normal pulp, will seldom bring forth any respond, but a hyperæmic pulp will respond vigorously. An attempt should be made to soothe and maintain the vitality of a pulp found in this condition, so that the physiological process of root resorption may not be prevented. The obtundent oils are of great service in all of the pulp disturbances of children, and thymol is the most effective. If the pain is relieved in from 24 to 48 hours, the cavity is given a retentive form, and a pulp cap—filled with paste, consisting of thymol, glycerin and zinc oxid—is laid upon the deep wall of the cavity and a filling of zinc phosphate flowed over it. If evidences of active pulpitis are present, the symptoms would be throbbing pain, increased in the recumbent position, also a respond to both heat and cold, but

more to the former. It is advisable to first soothe the pulp then destroy and remove it. If soothed and the cavity filled, the pulp dies and septic pericementitis arises. After the pulp is removed the canals are cleaned and filled with an antiseptic oil, dried and filled at once. The material selected should be such that if absorption of the root occurs, the root canal filling should not interfere. Several materials offer themselves, in preference to all others, melted paraffin and balsam of the desert, iodoform and glycerin, or iodoform and oil of cloves.

A word or two will suffice for septic pericementitis, which may present itself as an acute or chronic condition. The treatment should be the same as for permanent teeth, that is, removal of the cause.

Prophylactic treatment—this lies in the hands of the parent. The nurse or parent should begin early to clean the child's teeth, by means of a cloth wrapped around the finger, later followed by a small brush and floss silk, also using a 10 % solution of listerine as an antiseptic mouth-wash.

Southern Branch National Dental Association.

SECOND ANNUAL MEETING.

NEW ORLEANS, LA., FEB. 9-10-11 AND 13, 1899.

(Special Report, for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

Continued from page 236.

A Remarkable Case.

BY DR. C. B. JOHNSTON, MONROE, LA.

During the civil war, at the siege of Vicksburg, on the 10th of June, 1863, Capt. Alex. Myatt, of the Confederate forces, received what was supposed to be a fatal wound, having been shot in the right eye, the missile afterwards proved to be a Springfield rifle-ball of about 55-caliber. Death did not ensue, but for more than a third of a century the leaden missile was a continued source of torture to its victim. The wounded soldier remained in the hospital until the fall of Vicksburg, the 4th of July. General Grant, who was in command of the Federal forces, visited the Confed-

erate hospital after the surrender, and had his attention called to the nature of the wound, and became so interested in the case that he ordered his staff surgeon to visit the patient and examine the wound. After careful examination, this eminent surgeon agreed fully with the diagnosis made by the Confederate surgeons; that the bullet after penetrating the eye, had taken a backward course, lodging in the back part of the head, its location making its removal impossible, except at the risk of the patient's life. On the 17th of July the patient was paroled and sent home, a physical and alas a financial wreck. Notwithstanding his condition, however, he has accumulated a competency for his declining years and made ample provision for his family.

During these thirty-five years he suffered more or less constantly, from the pressure of the bullet, and from time to time visited the most eminent surgeons in hope of obtaining relief—among others the noted Dr. Stone of New Orleans, but always to no avail.

His sufferings were finally brought to an end, by the services of a dentist, and in a most remarkable manner.

In the fall of 1898, Capt. Myatt called on Dr. Johnston, for the removal of a broken tooth. To the surprise of the operator, a foreign substance, evidently *lead*, was found to be occupying the depths of the socket, after the removal of the tooth. This seemed so incredible that, at the request of the patient, his family physician was called in to make an examination. A brother dental surgeon, Dr. J. F. Johnston was also called in. After careful examination, the foreign substance was pronounced to be the bullet which had entered the eye of the patient thirty-five years previous.

The operation of removal was tedious and difficult, as it was necessary, with saws and drills to divide the bullet into sections, and several days were consumed in the operation, as the patient objected to the use of any anesthetic. It was successfully accomplished, however, and the old veteran enjoys life once more, and has gained 20 lbs. in weight since the operation.

After removing the several pieces into which the bullet had been divided, the gaping wound was well washed out with peroxid of hydrogen, and then packed with dry cotton thoroughly impregnated with iodoform, the dressing being changed about once a week. Some little necrosed bone was thrown off and there

is still a little more, but as the patient will not permit the use of any anesthetic, Dr. Johnston proposes simply to assist nature in completing the powers of healing. One small piece of necrosed bone came away through the nostril. The patient is doing well and has better health and enjoys life more than at any time since receiving the wound in 1863.

"Absorption Areas" and Pulp Nodules.

BY SAM'L P. COWARDIN, F.R.M.S.

In making a very large number of sections, in his microscopic work, not less than 3000 human teeth having been carefully inspected, three teeth having been found by the author, containing *large* absorption areas. In one case of these teeth, (which was submitted for inspection) there is on the outer surface a seeming plug of cement-like substance which seems to fill the point from which the tooth was attacked, the partly re-filled absorption and connecting with the cementum and not with the pulp. In these three cases some considerable part of the dentin is absorbed, but in quite a good many cases, probably fifty or sixty the author has found minute "absorption areas," and he has observed that whenever he cuts an old tooth, which shows a heavy coat of cementum with evidence of abscess, there is more or less of absorption area. The author suggests the desirability of an investigation as to what proportion of normal teeth contain pulp stones. Many of the teeth used by the author have probably been extracted for purposes of regulating or inserting artificial dentures, and in these apparently normal teeth he finds pulp stones very common—probably 66%, showing pulp stones. The author's observations lead him to conclude that in fully developed teeth, and certainly in old teeth, it is rare that a pulp is entirely free from these nodules. Hence he doubts if they are so generally a source of the serious trouble attributed to them by many writers.

Formaldehyde in Dentistry.

BY H. STUART M'LEAN, M.D., RICHMOND, VA.

This paper gives the results on the first of a series of systematic tests, undertaken for the purpose of determining definitely, what has hitherto been surmised, or taken for granted, as to the

action of certain germicidal agents, and their exact value as sterilizing agents for dental instruments, tooth-cavities and root-canals.

The role of bacteria in the production of various diseases of the teeth is indisputable, and in dental pathology the classic researches of Miller rank with the studies of the greatest medical pathologists. The part played in the causation of caries, either by acid formation, or by some other product, and the production of pulpitis, either by direct exposures or by bacterial infection through the dentinal tubules, is fully established, and their remains simply the work of studying the various agents which may be used to counteract these conditions.

The first of the present series of test-experiments, was made with formaldehyde, which has been recommended for use in dentistry but accompanied only by general observations as to its action. We are informed, for instance, that such and such an antiseptic "inhibits the growth of ——— bacilli when and in ——— strength," but this simply means that when the restraining agent is removed, the growth continues as before. Again, to say that the germs are "destroyed" by a certain agent, and omit *the time* required to consummate this end, is to omit a very essential detail. In the present series of tests, upon instruments, teeth *in situ* and extracted teeth in the bacteriological laboratory, the *time* required for the given action is made a special point of observation.

(1). *Sterilization of Instruments.*—In the tests with instruments, burs, pluggers, excavators, etc., must send well into the crevices and curations, cultures of staphylococcus pyogenes cereus and bacillus typhosus were plastered, after which the inoculated portions were rolled in a paste of "tooth-dust" and saliva. (a) They were then placed in the incubator and dried, thus imitating as closely as possible the condition of an instrument after use and before cleaning. (b) Others were dipped in a 36-hour bouillon culture of the same bacteria and dried in a similar manner. The instruments were next immersed in a 5% solution of formalin, and after an immersion of from five to thirty minutes more—where size permitted, placed in a tube of bouillon—or cultures taken by scraping the instruments, or stroke-cultures made on agar-agar. Those prepared by the first method (a) were rinsed in sterile water after removal from the formalin solution; the others (b) were pressed lightly for a moment on sterilized filter-

paper. Control experiments were made with all the tests. With immersion in formalin 5% for 5 and 10 minutes, results varied slightly, but 30 minutes immersion gave the result "sterile" in every case.

In "five minutes," of five cultures of staph. pyog. aureus, two showed scanty growth; one in 60, the other in 72 hours; while of "10 minutes" one of four cultures showed scant growth in five days; 20 minutes "sterile." The variation was probably due to the hardened condition of the material with which the instruments were plastered, as no agitation was used while exposing the instruments to the action of the antiseptic. With 20 minutes immersion in one tube only (of eight) bacillus typhosus showed growth on the third day, but as this grew as well and as rapidly as the control cultures, accidental contamination is strongly suggested. One objectionable feature which developed was the tendency to rust, if instruments were left in the solution over night (18 hours or more), but as only old instruments, roughened by previous usage, were used in these experiments, oxidation was probably favored by these conditions. The practical inferences from these experiments are (1) that all debris should be removed from instruments before they are laid aside for subsequent sterilizing, as the caked debris may harden and prevent the penetration of antiseptic fluids. (2). The instruments should be dried after cleansing and not allowed to remain longer than necessary in the solution. (3). A fresh solution is advisable every morning unless precautions are taken to prevent evaporation. Formaldehyde is an inexpensive sterilizing agent. (4). The solution is most convenient for use if kept in a shallow glass disk with flat bottom and perpendicular sides with a loosely fitting cover.

(2). *Sterilization of Cavities.*—For cavities in teeth *in situ*, molars were selected and carefully isolated from the cheek and tongue. The cavity was carefully cleaned of all extraneous matter, decay, etc., and prepared as for filling. After thoroughly drying with cotton, with a platinum needle a small portion of food removed from the cavity and which had been soaked for a few minutes in a 36 hour bouillon culture of the staphylococcus pyogenes aureus (or of bacillus typhosus) was smeared on the bottom and sides of the cavity. The cavity was immediately filled with cotton saturated in a 5% solution formalin which was left in position for five minutes. The cotton was then removed and

cultures taken from the bottom and sides of the cavity. Cotton with a 1% solution was then introduced and the cavity sealed—some for twelve and some for twenty-four hours, when cultures were again taken from the surfaces. The technique with extracted teeth was practically the same. The tabulated results show that sterilization takes place in the majority of instances after a five-minutes exposure; after 12 and 24 hours with 1% results uniformly successful.

(3). *Sterilization of Root-Canals.*—The time allotted to the root-canal tests was too brief for any accurate conclusions to be reached, the chief obstacle being the difficulty in obtaining from the bottom of the canal a culture that would not be removed from the fine instrument by friction against the sterilized material at the top of the canal. The method employed was practically the same as for cavities. While marked success was obtained in one series of tests, uniform failure attended another series under apparently the same conditions. As this is, in many respects, the most important of the three divisions of the subject on account of the danger of forcing infectious material through the apical foramen, thereby producing pericementitis, abscess, and even distant metastatic septic lesions, a more thorough investigation has been planned, with a radical change in the technique, and with various antiseptics, in the hope of arriving at some reliable conclusion.

ABSTRACT OF DISCUSSION.

In the discussion of this paper Dr. WALKER spoke of the desirability of a definite basis from which to reach conclusions as to the positive merits of these agents, formalin being the one in question at this time; how long it takes to penetrate to the foramen, sterilizing the canal throughout, etc. If one knew that in ten, twenty or thirty minutes, a superior root-canal be completely sterilized, with no liability of infecting the antrum that knowledge would be very satisfactory to us. We know that merely wiping out the canal is no safeguard. If we knew that our instruments could be effectually sterilized by immersion in some solution, that would be much less trouble than boiling them. But we want these points proved, not merely asserted. Hence the value of such experiments as those described in the paper, which are but the beginning of a series to be continued until definite and positive results are reached or found to be impossible.

DR. H. H. JOHNSON considers formaldehyde as too powerful an irritant to be used in a pulp chamber or a root-canal from the liability of penetrating the foramen and causing serious trouble.

DR. MACLEAN considers that there is very little danger of its escaping through the apical foramen, its coagulating properties preventing that. But in all the experiments upon teeth *in situ* they were very carefully isolated. He would, however, consider over 5% too strong for use in the teeth except under unusual conditions.

DR. JOHNSON cited a case in his own personal experience, having taken into his mouth from a sample bottle of mouth-wash, and finding it very *hot*, he looked at the formula and found that it contained 5% formaldehyde.

DR. WALKER disclaimed against the fairness of citing this incident against the use of formaldehyde in cavities in the teeth and in root-canals which are properly isolated from the soft tissues. He has been using formaldehyde empirically for the last two years, having, however, first read all the accessible literature on the subject, in order to use it as intelligently as possible. He has no deleterious effects but apparently good results. In the ordinary dressing of root-canals he uses 3%, but in cases of open foramen, only 2%. When there is reason to believe the foramen small and prompt results are desired he can use 6%, keeping solutions of different strengths on hand ready for use as required; 10% may be applied to the putrescent contents of a root-canal, the strength being reduced as it penetrates the mass of putrescent matter.

Conscientiousness in Our Daily Practice.*

BY A. S. SAWYER, D.D.S.

"THE first interest is your own, and it may seem to you the greatest, while it is really the least. The second interest is truly greater for it is the interest of your professional brothers; but the last is the greatest of all, for it is the interest of your patient, and with that is eternally related the interest of the art you practice."

* Abstract of a paper read at the Vermont State Dental Society, Burlington, Vt., March 13-17, 1899.

The interest of our patient should be our first consideration when he or she presents himself or herself for our examination and advice. It is here that our conscience should have full play.

We have many things to consider and in a measure decide, such as the physical ability of our patient to endure a certain operation, her financial ability to compensate us for it, our own ability to properly perform it, and what under all the circumstances of the case would be best for our patient.

To extract a tooth which, by reasonable care, skill, and patience on our part, and a willingness on the part of the patient to bear the necessary discomfort and give us a suitable fee for our services, could be saved, is in the highest degree reprehensible.

The sterilizing of instruments. How much that is important and far reaching is contained in the four words! How much of happiness or misery, life or death even they may contain, according as they are observed or neglected.

To use mouth-mirrors, forceps, trays, rubber dam, burs, and other instruments in the mouths of different patients without first thoroughly cleansing and sterilizing cannot be too severely condemned.

When we think what a hot-bed of germ-life the mouth is and the seeming carelessness of so many dentists, we wonder that diseases are not more often than they are communicated in this way. I have been amazed when visiting dental offices to see forceps put back in the case without any attempt being made to cleanse them. And how often are burs and excavators used without cleansing and without the dam. It seems to me that the danger of transmitting disease from one patient to others by the careless dentist is peculiarly great. His fingers and instruments are so constantly going from one mouth to another that even though ordinary care be used there might still be danger. But what can be expected where no care at all is taken? Where rubber dam and finishing strips are used over and over, and even where the hands are seldom washed?

I remember calling upon a dentist, a college graduate, and while there he invited me into his laboratory and there I saw stretched across the end of the room a line on which was hung to dry several pieces of dam. He asked me if I used my dam over. I replied in the negative. He said he never used it on different

patients but did on the same ones. I have no doubt it is possible to thoroughly cleanse and sterilize a piece of rubber dam, but I think the saving is too inconsiderable and that the patient would much prefer to pay an extra fee and be sure it had not been used before either on herself or others. In another office I saw a dentist at his chair finish a gold filling, and saw him take from a drawer in his cabinet, which was nearly full of partly worn out strips, some of these to finish the filling, and when through, back they went into the drawer again, to be used on the next victim. I have also seen dentists in cleaning teeth and polishing fillings for different patients dip their rubber points into the same box of pumice until it was all gone, when it would be refilled and the same thing repeated.

What possibilities, indeed what probabilities of infection there lies in such careless practices. Perhaps none of these charges could justly be laid to any of you; but is there one here who honestly believes he is, at all times, as careful as he should be? If there is such, to him I uncover my head.

On every operating table should be some means of sterilizing instruments. Forceps and trays may be cleansed and sterilized in boiling water.

The rubber dam, when a clean piece is used, is a great preventive of infection, and besides makes it possible for the operator to do better work.

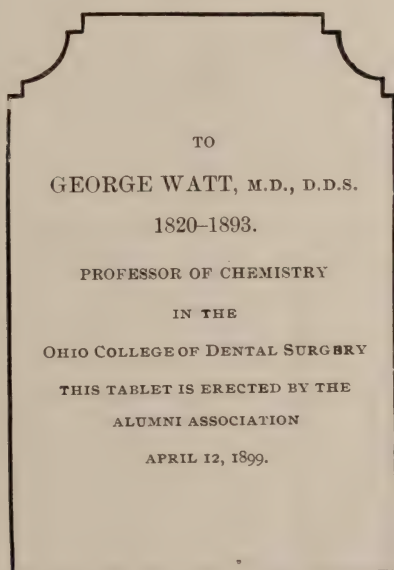
It has been said that you can judge of a nation's civilization by the amount of soap it uses. I believe you can judge of the kind of a dentist a man is by the amount of dam he uses (rubber dam).

These dangers of infection through the carelessness or ignorance of the dentist have been little thought of by our patients in the past; but they are beginning to realize the dangers and appreciate the efforts to prevent them.

To our patients we owe the best that is in us, and he who gives freely his *best* services, every time, is certain to reap a rich reward not only pecuniarily but in the gratitude of his patients, the respect and esteem of the profession, and the conscious satisfaction of having done his whole duty. Happy, indeed, must he be who, when he has lain down the mallet and chisel, can conscientiously say of his life work, well done.

Watt Memorial Meeting.

At the Alumni Association of the Ohio College of Dental Surgery, held at Cincinnati, April 12, 1899, there was unveiled a marble tablet to the memory of Dr. Geo. Watt, an alumnus (1854), a former teacher and officer of the college, and a man well known during his life as a dentist, editor and investigator. The tablet unveiled by Dr. J. Taft, is of white marble and of the following design :



It was through the influence of Dr. Watt that the OHIO DENTAL JOURNAL was started and during the ten years he was its editor he won for it a national and lasting reputation.

Dr. Watt was a remarkable man and did much in a scientific way to advance dentistry.

At the alumni meeting two addresses bearing on the life and work of Dr. Watt were read, one by Dr. Taft, the other by Dr. E. G. Betty.

We feel that both can but interest the whole profession and we therefore take pleasure in presenting them in this issue.

Dr. George Watt.*

BY E. G. BETTY, D.D.S., CINCINNATI.

IT was my good fortune immediately upon graduating to consummate an arrangement with Dr. Watt, whereby I was to take charge of an operating chair in his office. I accordingly removed myself and my effects to the little town of Xenia, and was domiciled as a member of the doctor's household. I was a mere stripling and had scarcely ever been away from the fostering care of the paternal roof, and when I realized that home ties had been severed, the Rubicon crossed, and the great plain of my future stretched out before me, I was appalled and had I been a girl, I undoubtedly would have indulged in a good cry. As it was, my heart failed me and I told the doctor he would better get somebody else to do his operating for him, I did not feel equal to the occasion.

He was seated in his large tilt back chair, just such an one as you have often seen in the office of some down-town merchant, reading that good old-fashioned paper the *Cincinnati Gazette*. He looked up at the sound of my timorous voice, and for the first time I obtained a good view of as kind and merry a pair of blue eyes as ever twinkled over the golden bow of a pair of spectacles. He looked long and steadily at the trembling boy before him, summing up the situation and I can hear the rustle of the paper to this day as he laid down the *Gazette* and said, "Let's take a walk." That walk was just what I needed and he knew it. The morning was cold and crisp, the sun shone down from an intensely blue sky upon a light snow which had fallen during the previous night; the air, rich with ozone, filled my lungs with a draught as exhilarating as wine and ere half an hour had passed a wonderful metamorphosis had taken place; the homesick lad was now an ambitious youth ready to do or dare.

From that day forth a new life had begun for me and under favorable conditions too, for though I did not then appreciate it, I have since learned to realize that I was associated with a man of broad attainment and correct habits of mind. He was brim-full of humor at nearly all times and no matter how dull the subject, how abstruse the point, he never failed to illustrate with

*Read at Watt Memorial Meeting, Cincinnati, April 12, 1899.

a witty remark or humorous story, which invariably relieved the tedium of hard work and prevented the mind from clogging. In all my acquaintance, I can recall no one more tactful than Dr. Watt. He observed keenly, analyzed carefully, summed up with the skill of a practiced logician and knew just the moment when "a word fitly spoken is like apples of gold."

Of Scotch ancestry, he was by nature augmentative, but not quarrelsome; talkative without garrulity, and furthermore possessed the virtue of always having something to say.

He had a rare sense of justice and his sympathies were always with the under dog.

Nothing pleased him better than to spring a surprise upon you in the way of a new fact or to introduce an old friend with a new face and see what you thought of it.

Dr. Watt was not only a great reader, but he was a keen and consistent thinker. Nothing escaped his observation, for his eyes were quick to see and his well trained mind classified and arranged its vast store of knowledge, while his discriminating judgment enabled him to use this ponderous power to the best advantage. Woe to an adversary in debate should he not be well fortified with an array of well established fact.

He was the only man in the dental profession who could successfully handle and confute the late Dr. W. H. Atkinson, whose vagaries at one time occupied a large share of attention in the American Dental Association and other bodies, and much valuable space in the transactions and journals of that day.

Against these Dr. Watt now and then discharged a volley of satire and ridicule, so sharp, so scathing, so withering, that none but Atkinson could have held out so long. Dr. Atkinson's Angels and Volapuk, together with the animadversions of Benjamin Beryl Blynx, constitute a theme worthy of an Isaac D'Israeli and deserves perpetuation as a curiosity of literature rather than a quarrel of authors. Atkinson's Volapuk contained within itself, its own tubercle, though I am firmly convinced Dr. Watt's broadsides of grape and shrapnel, but hastened what might otherwise have been a slow and painful death.

These attacks were in no wise acrimonious, but it was a sight worth miles of travel to look at Watt's face while Atkinson was going through his characteristic performance of injecting the grace of God with a syringe.

I hope some master hand will gather together the chronicles of this battle royal and give it to us in its entirety; it was a contest between giants, the like of which does not occur more than once in a generation.

Few writers in the ranks of the dental profession have wielded such a graceful pen; certainly none have excelled him in command of language. He was a close student of English literature and was familiar with all its classics; his remarkably retentive memory, enabling him to lay up vast stores of riches upon which he could draw at will. His diction reminded me much of Addison. Now and then of an evening by the cosy fireside he would give way to chatty reminiscence, his experience as a student, his trials as a medical practitioner in country districts, and through it all I could recognize a resemblance to dear old Sir Roger.

He once told me that his literary models were Goldsmith and Kirk White. Just think of it; Goldsmith and Kirk White.

What a contrast; what a gulf between them. Goldsmith, a Bohemian in every sense of the word, a poet who wrote for the world and for all time, who sounded the remotest depths of the human heart and set its strings to vibrating with eternal harmony.

Kirk White, a religious ascetic, long ago forgotten and whose name the most of you are now hearing for the first time.

I cannot account for the coupling together of these two men unless it be that Watt loved Goldsmith as the child of nature, while he revered Kirke White for his Calvinism.

Dr. Watt was gifted with that which few scientific men either possess, or if they have it, few cultivate; a lively imagination.

'Twas this which gave such rich coloring to his speech, an indescribable attraction in all he wrote. Many a gem has fallen from his lips, many a jewel adorned the editorial page. I have heard the complaint oft repeated, "This is not practical," or "that is not scientific," "we want facts." Poor sodden fools, the pearl was there, but the swine saw it not.

Can any one recall throughout the whole length and breadth of dental literature anything to compare with "Lord Oxygen," and his worthy consort "Lady Hydrogen"? These are masterpieces of English composition, they bristle with scientific facts for the

gradgrinds ; the imagery is beautiful and delicate as the crystal flakes which fall from the winter sky.

I know of nothing with which to compare them unless it be Faraday's "Chemistry of a Candle," or Huxley's essay on "A Piece of Chalk."

Of the scientific nature of Geo. Watt's mind, his chemical theory of dental caries is ample evidence.

The careful construction and elaboration of that theory was the work of many years ; for many years was it taught in the colleges and for near a generation was part and parcel of many a lecturer's stock in trade. And though in recent years the formulation of the germ theory through the labors of Mills and Underwood and Miller, in consonance with the germ theory of disease in general, has been of great benefit to dental science, it is possible the story has not all been told.

Farther and deeper investigation may yet explain the clinical features for which the chemical theory provided. There may or may not be found a bacillus to account for the presence of ammonia and its compounds in the mouth.

I have grave doubts that the microscope will do away with the science of organic chemistry. Until this is done Dr. Watt's chemical theory of dental caries with all it implies, remains to be disproved. He may have builded wiser than we know.

In his private life, Dr. Watt was eminently domestic ; all his tastes gathered around the hearthstone. It was there the privileged friend became acquainted with the real inner character of the man. To have known him at such times is a memory to be cherished. The recollection of his good, kindly face will abide with me always.

I need scarcely say to those who knew him, that he was a man of profound religious conviction, a condition of mind not at all inconsistent with an intellect trained in scientific induction. He firmly believed in the immortality of the soul. The heaven he longed for and looked forward to was one in which he should be permitted to peer into the infinite. As Sir John Lubbock words it, "The solution of problems which have puzzled us here ; the acquisition of new ideas ; the unrolling the history of the past ; the world of animals and plants ; the secrets of space ; the wonders of the stars and of the regions beyond the stars. To become acquainted with all the beautiful and interest-

ing spots of our own world, would indeed be something to look forward to—and our world is but one of many millions. I sometimes wonder as I look away to the stars at night whether it will ever be my privilege, as a disembodied spirit, to visit and explore them.”

“I feel that to me,” said Gregg, “God has promised not the heaven of the ascetic temper, or the dogmatic theologian, or of the subtle mystic, or of the stern martyr, ready alike to inflict and bear; but a heaven of purified and permanent affections—of a book of knowledge with eternal leaves, and unbounded capacities to read it—of those we love ever round us, never misconceiving us, or being harrassed by us—of glorious work to do, and adequate facilities to do it—a world of solved problems, as well as of realized ideals.”

It is meet that we do honor to the memory of such a man as Dr. Watt and when we look upon this tablet, I trust it will remind us of his lofty ideals and stimulate us to emulate a noble example.

Historical and Biographical Sketch of Geo. Watt, M.D., D.D.S.*

BY J. TAFT.

In accordance with an invitation by several dentists, I here present for your consideration, a brief sketch of the life and career of the late Dr. Geo. Watt, of Xenia, Ohio.

Dr. Watt was born on the 14th of March, 1820, on a farm about eight miles east of Xenia, Greene county, Ohio. His father, Hugh Watt, was born in the north of Ireland, of Scotch parentage, his mother was a native of western Pennsylvania, and also of Scotch parentage.

Dr. Watt and his wife possessed the firm and sturdy character of the Scotch people. This portion of Greene county at the time that this home was established was an entirely new country. Very little had been done in the neighborhood in the way of opening and bringing under cultivation, the rich land of that section. Many of the animals of the native forest were still there.

Dr. Watt related many incidents of hunting, capturing and killing wild deer, wolves, bears, catamounts, etc.

Dr. Watt's early training was under the high moral and

*Read at the Watt Memorial Meeting.

strictly orthodox religious influence characteristic of the Scotch and Scotch-Irish people. It was of a sturdy and full pronounced type that manifested itself all the way through the career of the subject of this sketch. His educational training was commenced at the age of seven years. The schools at that time and in that part of the country were very primitive, and were continued but for a small portion of each year. He remained in the family home till October, 1835, when he left and went to Adams county, Ohio, and entered a boys' academy, established and conducted by Rev. Wm. Taylor.

He entered upon his course in his new home, engaging to pay his way, including boarding and tuition, by services; such as he could render on a farm, and in connection with the school. Under this arrangement he was only able to devote a little more than one-half of his time to study, notwithstanding this disadvantage, so persevering and industrious was he, that he made rapid progress.

This kind of life away from home and its genial influence, was a new experience to him. He found an absence of home surroundings, sympathy and affection he so fully enjoyed in his father's house. It was a great revelation to him. The embarrassments that came upon him, and the treatment he received made a strong impression upon him, more pronounced from the fact that he was of feeble constitution and often sick. The family with whom he was, seemed not to be in full sympathy with him and exactions were oftentimes put upon him, that he was ill able to bear, and from it he often suffered greatly; so that he was taxed beyond his strength. At a number of times he was severely ill, and in two or three instances it was thought he was past recovery.

He remained in the academy two years, during which time he devoted his time to the study of mathematics, English and the Latin languages. In this he made rapid progress, he kept up with his class, the other members of which devoted all their time to study. At the end of two years he engaged in teaching in a common country school, in the vicinity of the academy, remaining there however for only about one year, when he returned to his father's home, and there engaged for about four years. He was successful and popular as a teacher.

In 1840 he entered a college at Riply, Brown county, Ohio,

remaining there about one year, leaving there in 1841 and returning to Greene county, and there again engaged in teaching; and began the study of medicine under the supervision of Dr. Samuel Martin, at that time a noted and successful physician of that place. In Dr. Martin he found a teacher with whom he not only had superior instruction in Medical science and practice, but he also had there inculcated in the receptive mind, the views of the dignity and importance of medical science and practice, that characterized him throughout his life.

He practiced with and for the preceptor about one year, after which he removed to Bentonville, a small town in Fayette county, Ind., where he soon established an excellent practice, especially for a new country.

Not being satisfied with his attainments in medical science, he entered the Medical College of Ohio in 1846. He graduated with honor in 1848.

He was so fortunate as to take his medical course under the instruction of a faculty whose professors were shining lights in the medical profession, embracing the celebrated R. D. Mussey, who as a surgeon had no superior in this country; J. T. Shotwell that celebrated anatomist; Dr. Harrison, Professor of Theory and Practice, a professor of world-wide reputation, and Dr. J. Locks, Professor of Chemistry, who, as a teacher of this branch at that day had no superior.

Dr. Watt enjoyed the high privilege of especial acquaintance of each of these gentlemen, and such an acquaintance as insured to him the very best that these professional men could give to an industrious, capable, eager and enthusiastic student. The privileges thus enjoyed were utilized to their full extent by Dr. Watt, and to this fact, may in a large measure, be attributed the high order of medical attainments which he enjoyed throughout his life.

Dr. Watt possessed a very high estimate of the dignity of the medical profession, as such, he was intolerant to quackery and shams of all sorts in his profession.

On April 17th, 1845, he was married to Miss Sarah Jane McConnell, who was a native of Greene county, and had always resided with her father's family near Xenia. Like the subject of this sketch she was the youngest of a large family. These two families were for a long time neighbors and intimate friends, indeed they journeyed together in coming to Ohio.

After the completion of his medical course he practiced his profession in Indiana about one year.

Near the close of 1848, Mrs. Watt was poisoned by some means, never fully explained, whether by accident or by some evil disposed person, was never ascertained. The case came well nigh being fatal, recovery from it was slow, and the result as to recovery was for a long time doubtful. This condition of things made it necessary for the doctor to leave his practice and return to the vicinity of his former home. This change brought him to the practice of medicine in Xenia, where he remained till the spring of 1850, when he removed to Kenton, Ohio, where he continued in practice about two years. About this time his love for, and inclination to, special pursuits, began to be rapidly developed, as was shown by various investigations in which he engaged.

Early in 1852 he entered upon the study of dentistry, for which a good foundation had been laid, in his very thorough medical course. It is very rare indeed, that any one has a preparation for the course in dentistry equal to that possessed by Dr. Watt. His early medical education was superior. He then practiced medicine for a time, then took a regular medical course, for all this work he possessed a thorough mental qualification as well as inclination.

His attainments in chemical science were of a very high order. Having a love and inclination for it, with the highest order of instruction, he made unusual attainments in this branch of science. He began his preparation for this specialty with the writer of this sketch, and it was not long after this till it was quite apparent, that in the knowledge of the principles underlying the dental practice, the presumed teacher found his pupil quite his superior, but the knowledge of technic and practical matters by the teacher was set over against the superior knowledge of principles by the pupil, each was a pupil and each an instructor, so that there was no occasion for assumed superiority on part of either, at least this was the view entertained by both parties, so that all things went along harmoniously.

After about a year devoted to this study a partnership was formed between the teacher and pupil, this relationship was continued for many years, a year or two in Xenia and subsequently in Cincinnati.

Dr. Watt's ability as a teacher and as a thorough chemist

was so well recognized that in 1853 he prepared and delivered a course of lectures on "Chemistry," in the Ohio College of Dental Surgery. Dr. E. Black, L.L.D., had delivered a course of lectures on chemistry in this same institution for one or two years before, yet Dr. Watt made the first attempt to adapt a course of lectures on chemistry to the needs of the dental student, and he was the first to deliver such a systematic course. Hitherto all the work in this line had simply been such as was given to the medical students. During the time in which this course was delivered, he was not only a teacher, but was arranging a new course for himself, and was a member of the class, so that he was in the double capacity of a teacher and a pupil.

He graduated with his class receiving the degree of D.D.S., at the close of the term of 1854.

Though he was a graduate of medicine, with quite an extensive experience in practice and had not given more than one year to the study of dentistry and was a teacher, yet at the time of his graduation, he passed the same examination as the other members of the class. Immediately after this he resumed the practice of dentistry with his former partner. So well recognized was his ability as a teacher, that he was not long permitted to enjoy the quiet town and country practice. In 1855 he was elected Professor of Chemistry and Metallurgy in the Ohio College of Dental Surgery, which position he occupied for several years, and the results achieved by him, during this time, in the development of the application of chemistry to dental science and art, were of a very high order, and served as a stimulus for the establishment of the dental chair in other dental colleges, none of which had made this a special branch up to this period. Though chemistry has made a great and rapid progress and development, during the last half century, it may be well questioned here, whether the teaching of this branch in dental colleges is relatively any better to-day, than that done by Dr. Watt. He was the pioneer in directing the attention of the profession to chemistry, as one of the chief branches in dental science and art.

In 1852 Dr. Watt became a member of the Mississippi Valley Dental Society. During the many years of his membership he was always active in the interests of that organization. In 1854 a prize of \$100 was offered for the best published paper on Dental Surgery. He was a competitor for this prize, with the result

after the examination of many papers, the prize was unanimously awarded to him. He was for several years secretary of that society and was at the conclusion of this service elected its president. In 1856 he was a member of the American Dental Convention, held at Hope Chapel, in New York. This was the largest dental organization of the world at that time. At that time he read a paper on "Topical Remedies," which was extensively published and elicited much attention and discussion. The article was published in the 10th volume of the *Dental Register*.

In October, 1856, Dr. Watt with the writer of this sketch, became the owners and editors of the *Dental Register of the West*. This at that time was the only dental journal in the west and was the second oldest in the world. This relation was maintained for many years and only ceased when Dr. Watt's failing health rendered it imperative, but he was after that a regular contributor to the *Register* and the profession.

He in connection with Drs. Hammel and Taft established an office for dental practice in Cincinnati in 1855, this relationship was continued for about three years, when the sudden death of Dr. Watt's father made it necessary for him to remove to Xenia, Ohio, where he resumed the practice that had been established many years before. About this time he made some experiments in micro photography that were in advance of anything that had been accomplished up to that time. In 1860, in the time of the great trial of our nation, he promptly tendered his services. He was accordingly made surgeon of the 154th Regiment of the Ohio Vol. Infantry. His usefulness and efficiency in his position will be well understood when it is stated that the sanitary record of his charge was better than that of any other Ohio regiment. He was mustered out in Sept., 1864, after being disabled by an injury of the spine, having been crushed by a falling wagon, which resulted in loco motor-ataxia. After his return from the army, he entered into practice, as his feeble health would permit. In the summer of 1865 while in attendance upon a meeting of the American Dental Association. held at Chicago, he was severely attacked by a disease, which developed into cerebro-spinal meningitis. This condition was no doubt somewhat induced by his enfeebled condition already mentioned. With this severe affection he was confined to his bed for many weeks, much of the time in a semi-conscious condition, and there was but the slightest

hope that he would recover. After some five or six weeks he began to show signs of improvement and within two months, the disease passed away, but left him in a very feeble and precarious condition. Because of this impaired health condition, he was subject to frequent attacks of various diseases; his lungs from boyhood were not strong, and were the seat oftentimes of severe affection.

The frequent and severe attacks on his lungs, without fatal results were the occasion of surprise, and many a time astonishment to his friends and physician who attended him. Doubtless, the resistance he was able to make to these attacks, was due, in a large measure, not so much to the skill of his attending physician as to his own knowledge of the disease and its management. In 1865 he formed a partnership with Dr. N. W. Williams, they conducted a practice in Xenia, Ohio, for about one year, when they established a branch office in Cincinnati, of which Dr. Watt took charge. In 1868 the firm of Watt & Williams purchased the dental depot of J. C. Walters & Co., of Cincinnati. This they conducted successfully in addition to dental practice, for about three years, when they sold the depot to Spencer & Moore.

During his last residence in Cincinnati, his strength gradually became much impaired and after disposing of his commercial interests and resigning his position in the college, where he had been teaching for several years, he removed to Xenia on Sept. 30, 1871. Here he hoped to have a respite from active labor, but his active brain would not permit much rest, and in the spring of 1872 the firm of Watt & Williams was dissolved. Dr. Williams going to Europe. After this Dr. Watt formed a partnership with Dr. D. G. French, which continued for about one year, at the end of which he formed a partnership with Dr. E. G. Betty of Cincinnati. This relationship was also continued for about one year. After which he associated himself with Dr. W. H. Sillito, this continued for about three years, during which time his health was becoming more feeble and his strength well nigh gone.

It was deemed best that he should retire and no longer attempt the active duties of practice, but he could not be idle, and in 1881 he assumed the editorship of the OHIO JOURNAL OF DENTAL SCIENCE, a monthly journal of about fifty pages, and what it was during his administration, we will not describe here, suffice it to say, it soon became recognized as one of the most

valuable publications in the interest of the profession. Its pages always filled with matters of interest and profit, and much of this matter was from his facile pen. The editorials were always rich in thought and characteristic of the man, even in his best days.

In 1867 he published a volume "Watt's Chemical Essays," which contained the principal papers which he had written on dental chemistry. Many of these papers have been published in various journals, not only of the dental, but of the medical as well, and even in some of the leading newspapers.

Unfortunately the syllabus of his series of lectures on chemistry have never been published and only remain in the memory of some of his devoted students. He occupied a number of positions of prominence in addition to those mentioned, he was vice-president of the American Dental Convention, he was elected president of the American Dental Association, on the same day he became a member, the only instance of the kind on record. He was president of the Ohio State Dental Society the first two years of its existence; he was twice president of the Mad River Dental Society. In every responsible position he ever occupied the duties were discharged faithfully and efficiently.

Dr. Watt was one of the most easy, fluent and correct writers in the dental profession. His literary attainments were formed upon a high model, and is all we could expect of one of high literary and classical culture. In his case it was inborn rather than acquired, though as some explanation it may be said that his reading in early life was confined to the purest and best of English literature.

Though he lived and acted in the profession at a time of its formative period and doubtless did much to elevate to higher position, during his career, many principles were studied and brought to a higher degree of efficiency, by his efforts. His aim was ever for the betterment and elevation of his chosen profession. Many appliances and modes of practice might, did time permit, be cited here, in which he much improved these, and in many instances devised altogether new things.

A record of many of these has never been made. In reference to this it may be said, that he was modest, never anxious to put himself forward as an inventor.

Perhaps the greatest work he ever did was in the elaboration

of the principles involved in dental decay. That which he accomplished in this respect was far in advance of anything that had been previously done, and though extensive investigations and attainments have been made since the promulgation of his views and in certain directions advances made, yet some of his positions were so fully established that they have never as yet been successfully assailed.

He attained a national, and indeed an international reputation in the profession, in which he has left an enviable heritage to the future generations of dental practitioners.

DISCUSSION.

In discussing these papers Prof. Cassidy called attention to the fact that Dr. Watt's investigations upon the etiology of dental caries were especially interesting in connection with the recent writings upon the subject and his theories were far reaching and likely to hold a complimentary position with those of Dr. Miller, Williams and others.

Dr. Jas. Leslie who knew Dr. Watt intimately for many years recounted many instances of his kindheartedness and sturdy character.

Prof. H. A. Smith thought it a very good sign and boded much good for the profession, that a body of its members could thus come together and in this quiet and unpretentious way do honor to the memory of a distinguished brother dentist. It showed that heroes and hero-worship were quite possible in the profession of dentistry and memorial meetings should be more common than they are. After other interesting incidents and reminiscences in connection with Dr. Watt's life and work, by the members, the Association adjourned to the entrance hall of the college building and the marble tablet, which had been placed in the wall next to that of Dr. James Taylor was unveiled by Dr. Jonathan Taft, after which the Association adjourned to meet in April, 1900.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

A Case of Hemorrhage in a Hemophilic.—A lady had her first upper left molar removed. The hemorrhage stopped soon after the extraction but about seven or eight hours later it started again. The empty alveolus was plugged with cotton pellets, saturated in chlorid of iron solution but with little success. Later on a surgeon applied a lint tampon which effectually prevented bleeding for about three days. About the tenth day after extraction, the hemorrhage started again, a new lint tampon was adjusted. The conditions of the patient had become very serious in the meantime from the loss of blood. Finally the services of a dentist was called upon. He constructed a well-fitting Niemeyer's plate, but this did not fully prevent the escape of the blood. The lady had nursed a child for the last four months and this led to the belief that the hemorrhage substituted menstruation in a vicarious way. The doctor ordered hot foot-baths and applications of heat to the lower extremities which brought great comfort to the patient. Then the alveolus was cleansed from the blood-clot and a cotton-tampon, saturated in chloroform and covered with a thin paste of plaster of Paris, was inserted. This seemed to effectually remedy the conditions. The next day the plug had to be removed as a little red line on the plaster still showed some bleeding. A new tampon was inserted, using tannic acid and alum instead of chloroform, and this eventually prevented further hemorrhage. By employing proper tonics and nourishing diet, the patient soon recovered.—*Dr. Rozgonyi, Wienerzahn M. Sch.*

A Case of Uncontrollable Hemorrhage.—A servant girl, 20 years of age, had a tooth extracted. There was no hemophilics in her family, but she is very anemic. From the beginning, the hemorrhage was rather severe. All known remedies and appliances were used, but without effect. Snegirjeff's method, viz: A stream of hot water was employed, causing severe pain and scalding of the mouth and cheeks. This heroic treatment brought about a coagulation of the blood; a few hours later the bleeding

started again and the patient died three days after the extraction in the hospital to which he had been removed.—*Carlson, Ref. Wienerzahn M. Sch.*

Plastic Dentin.—This is a new preparation advocated by Dr. Fd. Klein, which in a manner represents the serum-therapeutics in dentistry. According to the description of the inventor it is a liquid culture of the microbes of dental caries with an addition of camphor to give it a plastic consistency. The remedy is used as a medium for capping pulps and for filling roots. Klein was able to demonstrate on an extracted tooth which he had filled six years ago with plastic dentin, the presence of a normal pulp and the formation of a secondary dentin.

Infiltration Method of Anesthesia.—For the infiltration method of local anesthesia Dr. Heinze recommends the following formula :

Eucain B,	-	-	-	-	-	0.1 (grs. 1½)
Sod. chlorate,	-	-	-	-	-	0.8 (grs. 11)
Agn. distil,	-	-	-	-	-	100.0 (℥ 3 32)

Tropacocain as a Local Anesthetic in Dental Operations.—Tropacocain is an additional alkaloid of cocain, composed of benzoic acid and pseudo-tropein. Liebermann constructed successfully the alkaloid by synthesis. A number of investigators have been engaged to find out its physiological action and formulated the following rules :

1.) Tropacocain is almost three times less poisonous than the hydrochlorate of cocain.

2.) The anesthetic effect is quicker and longer than the one of cocain.

3.) The action upon the motor centres of the muscles and the heart is much less than in cocain.

4.) The solution of tropacocain is just as effective after some months' standing on account of being antiseptic.

5.) [An] addition of sodium chlorate destroys the irritating property of tropacocain.

The author had the best results with a five per cent solution of the alkaloid, adding six per cent of sodium chlorate. He has tried the solution in his own mouth. Even after twenty minutes, he was still able to force an excavator through the gum into the alveolus without the slightest pain. The technique of the injec-

tion is the same as in using cocain; the lingual surface is more easily injected than the labial one. He concludes his report as follows: Even if the anesthetic property is somewhat less (?) the after-pain, the retarded healing of the needle-puncture, and the after-bleeding, are not to be taken into consideration. The not unimportant antiseptic action and sterility of the solution is of implicit superiority. By a correct injection of a few drops of a five per cent solution, containing six per cent sodium chlorate, the extraction can be made one minute afterwards. Toxic effects have not been observed.—*H. Albrecht, Odontal Blaether.*

To Prevent the Abrasion of Gutta-Percha Fillings on the Occlusal Surface of Teeth.—Dr. Philipp advocates the insertion of thin pieces of tin between the layers of the filling material. The metal must be parallel with the long axis of the tooth, thus giving greater resistance to the grinding motion in masticating food.—*D. M. F. Z.*

Difficult Eruption of a Third Molar.—In 1893, the patient, a man of 38 years, had his last lower molar removed with great difficulty. A fistulous opening remained, which would not yield to repeated topical applications. About one and a half years later, an abscess formed; it was lanced at different times. Finally it subsided but the pus-formation continued. In 1896 two trials were made to remove possible root remnants, but without avail. A small piece of yellowish enamel came to light which was regarded as the cause of the trouble. Still the pus-exudation continued. Various therapeutical means helped to diminish the process for some time, but still again and again it set in with renewed activity. In the meantime, surgical help had been called into consultation. A retropharyngeal abscess formed, which fortunately opened by itself. The vitality of the patient greatly diminished. A surgeon cut through the cheek near the angle of the ramus; the bone was found to be deprived of its periosteal covering and actinomycosis suspected. Fortunately, this proved not to be true; but the general health of the patient was so much impaired that he sought the solitude of a health resort during the summer. Very soon again he noticed a swelling near the angle of the jaw, which two surgeons pronounced as a neoplasm, probably a sarcoma. He would not submit to an operation and returned home. In December, 1897, which is four years after the first ex-

tractions, the eruption of a carious third molar took place. If we keep in mind, what infinite suffering the patient had to bear during this period of five years, and that nine physicians and two dentists were unable to locate the cause of his suffering, we must admit that the eruption of a third molar is one of those chapters of embryology which is well worth while to be studied more thoroughly.—*Dr. Fischler, Journal für Zahnheilkunde.*

Treatment of Antral Disease.—To open up the antrum for treatment, Prof. Partsch of Breslau, Germany, cuts through the gingiva from the second bicuspid bands to the second molar. The opening is made into the crista of the bone above the first molar. In the former operating methods, the pressure of the cheek would cause an almost complete closure of the opening as soon as the drainage-tube had been removed. Now the opening is placed further up, viz: in the crista which prolongates up to the zygomatic process. The diminution of the opening is very slow, practically no artificial means are necessary to keep it open. The numerous linings of the cheek will cover the opening so closely that it is almost impossible for any food material to pass through. A further improvement in the treatment is made by Protset in substituting the rubber drainage by solid glass covers, and this has given universal satisfaction. The rubber drainage had many disadvantages. They cause decubital ulcerations of the cheek and alveolar process and the adhering food material, which is easily decomposed, acts as an irritant upon the lining of the antrum. The glass covers were made of different thickness, of about $1\frac{1}{2}$ inch in length. The upper end was rounded off, while the lower end was somewhat thickened and cut oblique. These covers were borne by the patient with great comfort and could be kept easily clean. To prevent slipping into the antrum, a small disk or rubber dam may be stretched over the enlarged end.

Further observations have shown that the more or less rapid healing of catarrh of the antrum is materially influenced by the more or less good passage of air from the nose. . . . "By swelling of the mucous membrane the ostium internum is often obliterated and a stream of air unable to pass through. Our therapeutics has always aimed either to enlarge the naturally ostium maxillare or to restore the communication between antrum and nose artificially."

We have not seen any good results from irrigations with solutions of sodium chlorate and silver nitrate, nor from dusting with antiseptic powders (iodoform, airol, itrol).—*Prof. Partsch, Clinal Reports, D. M. für Z.*

The Prolongation of Nitrous Oxide Anesthesia.—Nitrous oxide is surely the least dangerous general anesthetic. Two points are to be taken into consideration why nitrous oxide is not more used to-day by the dentist. First, the price of the gas. This, of course, should have no consideration as long as the vital interest of the patient is concerned. A more important factor is, that the anesthesia is not prolonged enough for the extraction of a number of teeth. Three methods are used at present by which it is intended to overcome this drawback, and all three possess one factor simultaneously, *i. e.* the continuous supply of gas till complete anesthesia is obtained. Then the hood or the mouth-piece is changed. Caxon uses a tube apparatus which is pushed into the pharynx and his method is called the "pharyngeal" one. Hillard and Coleman use a nose-piece. Inhalation is made entirely through the nose during the operation. Thompson Madin has a third method, called the "oral method." He inserts a tube into the corner of the mouth, the nostrils are closed either by pressure of the fingers or by a spring, and the mouth is kept filled with N_2O . The best sign of the successful anesthesia is the color of the patient's face. The lips should have a blueish hue during the operation. According to Madin's table, one narcosis lasted nine minutes and fifty-five seconds. Thirty teeth were extracted, including many bad decayed roots.—*H. Albrecht, Odontol. Blaether.*

ALL SORTS;

Local Anesthetic.

The following is my method of producing local anesthesia: Make solution of chloral hydrate one part, and muriate of cocain six parts, apply with absorbent cotton to cervical margin of the tooth for one minute; then apply with absorbent cotton ethereal camphor and chloride of zinc for one minute, this and the cocaine solution act harmoniously. Alternate each for say five minutes; the gums will soon turn white and

become insensible; great care must be taken not to let these agents touch any other part of the mouth or membrane than that designated to be anesthetized, as combined they are very powerful and on the posterior molars they are not safe as they might get into the epiglottis. Therefore dam well with cloth around the teeth so the anesthetic will not spread, then, after extracting, apply vinegar thoroughly so as to neutralize the poisons, otherwise there will be sloughing. It is a powerful anesthetic but unsafe in careless hands. This is the reason I have not published it before.

I have searched *materia medica* from beginning to end for anesthetic agents that would work harmoniously together. The difficulty I have met with is that instead of harmonious action, there would be mutual destruction.

The above is the most effectual that my researches have been able so far to obtain.

I use other chemical combines with electricity which I have made a great success of for thirty years and am still using.

I have also used the above on exposed nerves sufficiently to extract them within five minutes. As soon as nerve surface is deadened work the anesthetic with a smooth probe along to the apex of the root.—U. SMITH, *Pac. Med. Dental Gazette*.

Supraorbital Neuralgia.

Recently a patient who was suffering from supraorbital neuralgia accompanied by intense injection of the conjunctiva was referred to me by an oculist for examination of the teeth. There were no dead pulps on that side of the mouth. No cavities in the teeth which were not already filled—most of the fillings being small. There was one large amalgam filling in the second superior molar which was removed but the pulp was not exposed. From repeated tapping on this tooth, the injection of hot and then cold water, I decided that the responses were sufficient to justify the destruction of the pulp. This was done with arsenic and after forty-eight hours the pulp was removed, the lingual root being found calcified one-third of its length from the apex of the root. That night the patient suffered from a retinal hæmorrhage, from which he recovered in about two weeks. The neuralgia ceased and the injection of the conjunctiva disappeared within two weeks and has not returned. Was the calcification of the pulp the cause of the neuralgia?—*Dental Review*.

Some Criticisms suggested by Gold Crowns, and by a Certain Class of Gold Fillings often seen in the Anterior Teeth.

My attention was especially drawn to this subject during the past winter by quite a number of cases that I happened to see. In some mouths were gold crowns which had been so inserted as to display the gold in a most repulsive manner. Another class of cases showed the manner of gaining access into cavities between the incisors so that the teeth were permanently disfigured, and a display of gold or other filling-material made necessary during the duration of those teeth. It seems to me that this is the age of the abuse of gold crowns. Crowning with gold has been and is one of the great advances that have been made for restoring to usefulness teeth that are decayed and broken down; but the abuse of those same gold crowns is a crying evil. The display of gold that we see in the mouths of people of good taste and refinement, well as in the mouths of people of low degree, is simply barbarous, and to my mind it is on a par with the custom of the savages of South Africa who wear enormous rings in their ears or in their noses. I presume if these barbarians should see the gold in the mouths of the highly civilized people of the United States, they would think it just as barbarous as we consider their rings and other adornments.

The bicuspid gold crown is rarely needed, and rarely ought to be used in the mouth; but we see it continually, and coming from the hands of men from whom we expect better things. What has brought this subject more forcibly to my mind than anything else is the fact that a number of the cases I have lately seen have been done by recent graduates from colleges, indicating that if they were not following the teaching of the professors in the dental schools, it was the result of their environment while in the college.

Let me cite a few cases: One is that of a refined, intelligent, and prepossessing lady who had five gold bicuspid crowns in her mouth, two on either side of the upper jaw, and one on the lower; and to prove that *gold* ones were entirely unnecessary, I will tell you that I removed all of them. Strange to say, it had never occurred to this lady that they were disfiguring until I removed one of them, which was quite defective, and put a porcelain crown in place of it, and she was so pleased with the result that she requested me to remove the others, which I did, effecting a wonderful improvement in her appearance. The condition of this mouth was simply barbarous, because there was an unnecessary, extensive, and disfiguring display of gold. These crowns were inserted by a dentist who had been in practice a number of years.

Another case which came under my observation last winter was that

of a lady who had six gold crowns—four bicuspid and two upper central incisors. The effect was most repulsive, and the work was done by a young man who graduated from a dental college four years ago. The mechanical adaptation was good, but artistically and esthetically it was horrible. This lady was in my office last Saturday, and I said to her, "I have forgotten the reason you gave for having *gold* crowns put on your front teeth. What was it?" She said, "The dentist said it was the only thing to do. I had been told he was a wonderfully skillful man, and I thought he was until he said, toward the finish of the work, that he was glad I had fallen into his hands, for the dentistry that I had had done before seemed to have been done by a blacksmith. I did not like that, for the gold fillings he referred to you had put in twenty-five years ago."

Another case was that of a child twelve years of age, with the six front teeth somewhat crowded, although there was a well-shaped arch. The dentist had extracted the lower left first bicuspid, which was free from decay, and crowned a first permanent lower molar on the same side, in which the pulp was dead. Just think of it! Extracting a perfect bicuspid so as to crown a pulpless first permanent molar in a child of twelve years. I thought that was one of the most outrageous cases of maltreatment I ever heard of. In ninety-nine cases out of a hundred, such a tooth will not be retained more than five or six years. The gum is all inflamed now, and there is an incipient abscess there.

Another case which came to me in the early part of the summer was that of a lady who had a number of gold crowns, at least five, possibly six. They were all more or less defective, one being particularly so, more or less decay having taken place near the gum-margin. I removed the crown, and to my astonishment found an almost perfect molar underneath. There had been a large, simple crown cavity in it, involving only the grinding-surface—an easy cavity to fill—and yet the tooth had been covered by a gold crown. The crown had been imperfectly fitted, leaving a space between the gold and the neck of the tooth, and decay had occurred there. I filled the new cavity and also the one on the grinding-surface, and the natural crown is in evidence instead of the gold one. This occurred early in the summer, and I have not seen the lady since. My present intention is to remove every one of the crowns in that mouth, for from that one experience I have an impression that I shall find fairly good natural crowns under all the gold ones. The previous cases I have criticised solely from an esthetic point of view, but this is a case of *racality* pure and simple.

Another class of cases, of which several have come to my attention during last winter, is where cavities between the incisors have been

opened into from the labial surface, leaving the palatine surface intact, although the cavities were not very large, thus disfiguring the teeth and necessitating the display of gold or other filling-material. It is a discreditable practice, yet it is quite prevalent, and is done by men who are skillful manipulators of gold foil. I have seen some beautiful fillings in such cavities as far as the mechanical adaptation of the gold to the tooth is concerned, but from an artistic or esthetic point a wrong has been inflicted upon the patient.

There is another reason why the display of gold ought to be avoided if possible. Nothing is more beautiful and there is nothing more admired than perfect manly or womanly physical condition. Every decayed tooth is a defect, and a display of gold in the mouth calls attention to the fact that the wearer of it is physically defective, in regard to the teeth at least, and the persons in whose mouths such defects are seen are just so much less attractive in the eyes of those who see them. So one is doing an injury to his patients every time he permits a particle of gold to be displayed that can possibly be avoided. I do not say that gold should never be seen in the mouth. We must look at things from a practical standpoint; but if you can repair the ravages of decay with porcelain or insert gold so that it cannot be seen, do so and you will do your patient a service. I have seen bicuspid and even incisors crowned with gold, and it was the very best thing that could be done under the circumstances, but while they were very useful and served a good purpose, they were never beautiful.—DR. WM. JARVIE, in *Cosmos*.

A Careless Practice.

Bernheim (*Jour. Amer. Med. Asso.*, March 18th, 1899), in treating of the effects of metallic mercury applied to the skin in the form of ointment, claims that the resultant systemic effect is not due entirely, if at all, to the absorption of the mercury after being converted into soluble forms by the action of skin gland secretion, but is dependent upon the vaporization of the mercury and its inhalation in this finely divided state. In support of this contention he cites the cases of persons who have been affected by salivation as the result of living in the same room with patients using mercurial ointment by inunction. Probably both agencies are operative. In view of these facts, the practice so common among dentists of mixing amalgam in the palm of the hand must be regarded as not without its possible evil consequences. Certainly squeezing the surplus mercury out upon floor or carpet, there to slowly vaporize or oxidize into air-wafted dust, is, to say the least, a careless practice.—*Dental Brief*.

A New Post.

The outfit is simplicity itself, and consists of a conical drill for straight and right-angled hand pieces; a solid platinum cone and a hollow platinum cone.

The method of procedure is equally simple.

Let us suppose a simple case, *e.g.*, mounting a pin tooth flushed at the back with gold or porcelain. The root is bored in a few seconds with the twist drill. Being conical it travels rapidly, accurately and painlessly. Next a solid cone is selected and fitted to the requisite depth. When the proper depth is got, it is indicated by scratching the post. It is then withdrawn and at this marked point filed back to a step. It will be found that the large circumference of metal gives ample scope for filing back sufficiently to arrange the desired position of the pin tooth. It also allows at the same time the getting of the proper angle of that part of the post to which the pins are to be soldered, and which must also pass through the porcelain which has to be fused at the back.

Having got the post properly filed back, the next thing is to make a hole in the thin piece of platinum which is to form the floor. This hole may be punched out with a rubber-dam punch and enlarged to rather less than the circumference of the post at its marked point. This must now have the cone forced through it into position. It will be found, if carefully done, that it will require no waxing to fix it—it will fix itself and can be withdrawn in position and soldered without investment in plaster. When soldered, it is again fitted to the mouth, model taken and then finished off in the usual way, backing it up either with gold or porcelain. The fixing in the mouth requires a very small quantity of oxy-phosphate smearing in the roof and on the post. There is no need to roughen the post, as it will be quite firm without, and better left smooth because then it can be removed by force should the porcelain by any means crack off.

The hollow cone post is designed to meet the requirements of any case and to facilitate the use of any tooth in combination with it. Thus, any of the following may be used: a Logan, a Newland Pedley, an ordinary pin, or tube tooth. A strong pin can be soldered in the tube at any angle to suit the adapting of a Newland Pedley, a tube or pin tooth, or, if a Logan is chosen—which I prefer to all on account of its strength and perfect appearance—the pin of the Logan is bent in the proper angle, the hollow cone is filled with porcelain body, any parts are added which may be required, and it is then fused in the gas or electric furnace.

A crown finished in this way has all the advantages of a Logan with none of its defects. There is ample latitude in the post to get any

required position. There is a perfect adaptation of the post to the root, with a minimum of cement. There is a natural and life-like appearance both back and front, and lastly, there is the satisfaction of being able to get the post out should fracture unfortunately occur.

A conical post has, to my mind, another and most important point in its favor, which is that the root is bored to receive it in exact relation to the shape of the root. Most is taken away where the thickness of the root is greatest, and least where it is smallest. This admits of drilling much deeper than is possible with a straight or parallel-sided drill. There is no fear of going through either at the apex or at the walls, besides which it gives a maximum of strength in the post where it is needed, while it is reduced to a minimum where no strength is required. I may also point out the advantages of a cone in fixing with cement. It clears itself as it goes into position. There is no pain in pushing it home, and none of that thrusting back which is the case with straight and square-ended posts. Of course, this form of post is particularly adapted for teeth with one nerve canal. They will, however, be found most useful for first upper bicuspid, using for these one canal only, whichever is most suitable, and filling the other.

So also for molar porcelain crowns, the post being fixed in the palatal root only. In these cases I have found the cones most useful, entirely obviating the difficulty experienced with the use of straight pins.

Another useful feature in its use in the fixing of bridges. Take, for example, a lower bridge extending from first bicuspid to second molar. Say the molar tilts forward and that a porcelain face is to replace the bicuspid made with an ordinary straight piece, it happens that as soon as one gets the molar into position the pin of the bicuspid strikes wide of its mark, *i.e.*, outside of the circumference of the bore. This does not transpire with the cone post, for, as before explained, it enters with the point into the largest circumference of the bore and has ample room to clear the walls of the bored root before it can become cramped or wedged.—A. P. WALLIS, *Jour. Brit. Dental Asso.*

A Hint in Orthodontia.

It sometimes happens that the second bicuspid are lost before the second permanent molars have erupted, and if neglected the latter would travel forward. It is frequently desirable to retain loose deciduous cuspids for some time, lest the bicuspid move too rapidly to the front, and narrow the space for the forthcoming cuspid. In all cases where these teeth are lost it is advisable to insert a vulcanite plate, with thin piano-

wire retainers, pressing gently against the obstrusive tooth. The vulcanite might occupy the space of the lost tooth, and should be cut away from time to time to accommodate the erupting tooth. Many an unsightly irregularity cut in this simple way may be prevented. A treatise might be written on the mechanical prevention of extreme irregularities. Some of the most interesting and successful cases in our practice were begun before the roots of the teeth, which were moved, were fully completed. In fact, the success of several noted cases was only made possible because the regulating was begun as early as the ninth year.—*Pac. Med. Dental Gazette*.

Surgical Treatment for Caries of Bone.

Mr. S.—, aged 26 years. This patient had a diseased superior right lateral incisor, which has the following history: When the tooth was first examined by his local dentist, some five years ago, a blind abscess was found to be the source of the trouble, there was no appearance of decay, the tooth being perfectly sound. A fistulous opening was made in the gum tissue at the apical end of the root and the abscess was treated through this fistula. The cause not being removed by treatment in this manner, an opening was made directly into the pulp chamber, and the abscess treated through the root-canal. The treatment thus far had occupied about one year, and to all appearances the abscess was cured and the tooth in an aseptic condition. At this time the root-canal was filled. In a few weeks another abscess had developed; the root filling was removed, and the tooth again treated for a period of two months; the operator being unable to check a serous discharge, inserted a dressing of aseptic cotton, and filled the cavity with amalgam. The patient experienced no further trouble for four years; at the end of this time the tooth again became sore, and also included the adjacent tooth on either side. The filling and root-canal dressing were again removed, when quite a considerable amount of pus was discharged through the root-canal.

Upon careful examination, I note the following condition: Superior right lateral incisor much discolored; quite a cavity has been formed in the superior maxilla in the region of the superior right lateral incisor; this cavity has been formed by caries of the bone; the apical end of the tooth extends into the cavity in the bone, and is in a softened condition. An operation is necessary. The patient being placed under an anesthetic, I performed the following operation, viz.: Introduced gauze into the posterior part of the mouth so as to prevent the blood from passing into the pharynx; made a crucial incision through the soft parts so as to obtain access into the cavity in the bone; the end of the root was cut off

smooth, and the carious bone removed. The removing of the tooth would not have effected a cure in this case. Better drainage would have been secured, but the condition of the bone would have remained the same; hence the extraction of the tooth would have been wholly unnecessary, as the diseased bone would have been left, and the process of disintegration would have continued.

Treatment.—Cleanse the parts thoroughly and pack with aseptic gauze, and leave for two days, then remove the gauze, cleanse the parts and dry them, and make an ocular examination; if at this time a few brown spots are seen, use a small curette and scrape them out. Having left this for a few days, granulations will form. In order to keep orifice open, make a plug of gutta-percha, made very smooth and to fit the opening closely. This plug may be removed from day to day and the cavity thoroughly irrigated. The inner end of this plug should be reduced in size and shortened corresponding to the development of the new tissue, and the process of shortening from time to time should continue until the cavity is filled with new tissue and the plug will no longer be needed.—T. W. BROPHY in *The Bur*.

Making of Inlays.

We will suppose a disto-occlusal cavity either above or below in which a gold or amalgam filling has failed to prevent perfectly the progress of caries. In such a case the caries has usually extended laterally, one side or both, and has usually disfigured the seat of the original filling. In such a case the lateral walls must be cut away freely because they have become undermined, and are frail, and because a greater extension is considered advisable for the prevention of the recurrence of a similar failure. The new caries has made an inclined plane in the region where a respectable seat for the previous filling had possibly been made. If the previous filling had not been carried through the fissure of the occlusal surface, this must be opened almost universally, and if it had been done previously it is usually well to cut some lateral extensions.

This preparation can usually be accomplished by means of chisel, carborundum and excavator without the use of rubber dam. The proximal cavities in molars are treated on so nearly the same plan that one description will answer for both classes. After such preparation I find an advantage in taking a fairly correct impression of the cavity with modelling composition (Ash & Sons', perfected), making to this a model in plaster or oxyphosphate, to which the piece of thirty-six gauge 24 k. gold can be approximately burnished and trimmed, saving much annoyance and gum laceration; overdoing the entire fitting in the mouth. In

fitting and filling this matrix, solder 22 k., is added first in the most depressed portion of the occlusal surface anchorage in the case we have under consideration, with continued fitting and addition of solder till the contour is obtained. At a convenient stage of the contouring it is well to tack at the proper point a small globule of high grade gold to serve as a stay and guide for shaping the proper contour in crystal gold or foil, the interstices of which are to be run full of the solder.

In obtaining the occlusal surface anchorage the pure gold plate will often tear or puncture in being fitted to abrupt depressions, into which puncture and depressions gold foil can be formed and its interstices filled with the solder, giving a substantial projection to be grasped by the cement. This is a typical proximal case.—W. B. AMES, *Review*.

A Method for Making Seamless Gold Crowns.

I will attempt to describe to you a method I have devised for making seamless gold crowns. The tooth or root to be crowned is prepared in the usual manner, and measured with a thin strip of copper or a fine wire. Select a draw-plate punch that will just pass through the measure and lay to one side for future use; cut and straighten the measure; from a piece of well-annealed copper plate (the same gauge as the gold used in the draw-plate) cut a strip the length of the measure and about three-fourths the width the finished crown is to be in length. Bend this strip, bringing the ends together, and solder; this can be done with silver solder over an alcohol lamp or gas-jet. Shape and fit this band to the tooth, trimming the edge so that it will pass under the free margin of the gum; also trim the other edge, if necessary, to prevent the opposing teeth from interfering when in occlusion. Remove the band, and with suitable pliers give the desired contour. Use vaseline in oiling the tooth on which the crown is to be placed, as also the opposing teeth, and place the band in position, wedging if necessary to keep in place. Fill with quick-setting plaster, and have the patient close the jaws and keep them so until the plaster sets. This gives the correct occlusion. Remove the band and trim the plaster to represent the remaining portion of the crown. This band and the plaster combined give the outward form of the finished crown. I call this the "crown form." Finish filling the band with plaster or moldine, and into this insert a burnt match, wood toothpick, or anything by which it can be most conveniently handled. Pour a rubber ring about an inch deep nearly full of fusible metal, and into this press the "crown form" full length, occlusal end down. Remove the plaster, and with a medium-sized wheel bur make a groove in the metal around the upper edge of the

band. Pinch the band together and remove. The mould for the crown is now complete. Draw a cartridge of gold to the size of the punch previously selected and shape it so that it will enter the mould. Into this, with suitable punches, drive shot and cotton until it is swaged to the form of the mould. A little oil dropped into the shot before the swaging is commenced will prevent them from being driven into a solid mass, and makes their removal an easy matter. Plate the mould in a ladle and melt away from the crown. Trim the neck of the crown to the line made by the groove in the mould, polish, and, if the work has been done carefully, it is ready to be cemented to place.

When crowning a tooth to be used as an abutment in bridgework, if but little if any of the occlusal surface is missing, the method differs from the above in the following respect: After shaping the tooth and fitting the band, with modelling compound take the bite, and, if the band does not come with it, remove, place in proper position, pour each side, and place in a crown articulator. After the plaster has set remove the compound and varnish the opposing teeth, place a little fresh-mixed plaster upon the end of the tooth within the band, close the articulator, and allow it to remain so about five minutes. Open and trim the plaster to the desired shape; then cut the "crown form" from the cast and proceed to finish as first described.

As you may have noticed, this method is made up in the main from parts of other methods. About the only original feature claimed is the sinking of the "crown form" into the fusible metal, full length, thereby making a mould or counter-die in which the crown is formed.

The merits claimed for crowns made by this system are perfect occlusion, proper contour, accurate adjustment, and the ease and rapidity with which the work can be done.—MARK HAYTER, *International*.

An Unpleasant Experience with Cocaine.

A few weeks ago I had a very unpleasant experience with cocaine, particulars of which may prove useful.

I was fitting gold collars for crowns to left mandibular canine and bicusps, first trying each one to place separately, and using some little pressure to slightly cut the surrounding gum. I applied to the neck of each of the three roots, on a pellet of wood, one minim of 5 per cent. solution of cocaine. I am particular in saying one minim to each, for the small glass container in which I place my solution, which is freshly prepared for each case, holds ten minims, and roll up and place in the cup at starting ten wool pellets or rolls; these absorb all the fluid.

Placing a roll of absorbent wool between the tongue and alveolus to absorb any solution that might run down with the saliva, I waited about two minutes, changing the position of the pellets occasionally. I then removed the wool and tried the collar upon the first bicuspid. Finding the gum still sensitive I applied a fresh pellet of wool to that root, leaving the others in their place. In about another minute or so I tried the collar upon the posterior root, and finding the gum insensitive, pressed the collar down to place and burnished it close; then removing the remaining pellets of wool, also the one under the tongue which was now in my way, I commenced to fit another collar. It had just got down to place without pain, when the patient remarked that her tongue and throat felt queer, as though they had no feeling, and she did not know whether she was swallowing or not; also that her hands were very cold; I felt them and they were death-like. I then noticed that she had turned a most ghastly hue, and had dropped down helplessly in the chair, the pulse was scarcely perceptible, but hard and rapid; her breathing quick and short, and appearing to come from the throat, not from the chest at all. Removing her to the couch we laid her full length, but there she was worse and struggled to get up as she could not breathe while extended. She breathed rather better when she sat upright propped with pillows.

Opening the case containing nitrite amyl capsules I found four all broken, some one evidently had been trying them to find out what they contained, I therefore gave the patient a teaspoonful of salvolatile, following that with a cup of hot strong coffee, and later with hot brandy and water.

She appeared to be in a state of collapse, hands, body and feet cold; face blanched and grey, with peculiar bluey green-color; shivering and shaking constantly. We drew the couch up to the fire, wrapped her in blankets, rubbed her hands and limbs, applied hot water, and gradually, though not for several hours, she rallied, and her breathing improved. Then her color became better, and later the pulse, and at the expiration of four hours she was able to go home in a conveyance.

After she left I examined all the appliances, and found six unused pellets, so at the most, she could only have had four minims of 5 percent. cocaine solution applied to her gums on wool; that means perhaps $\frac{1}{3}$ gr. allowing for that remained in the wool unabsorbed.—J. C. BIRCH, *Jour. Brit. Dental Assoc.*

Annealing Gold.

Much of the difficulty experienced by operators in the insertion of gold is due to faulty methods of annealing; and, even among operators

who are sufficiently skilled to obtain good results by the ordinary methods, there is much to be gained by adopting some of the more recent advances in this most important particular. The great majority of operators are in the habit of annealing their gold by passing it through the flame of a lamp or a Bunsen burner,—a method which has serious objections. In either instance we are never certain of always having a pure flame, and if we do not have a pure flame we jeopardize the working quality of the gold. An alcohol flame is seldom uniform in its character, from the fact that it is so appreciably affected by atmospheric changes. An undue humidity in the operating room will result in a vitiated flame, which shows itself in a yellowish tinge. The presence of moisture in the air always affects this flame, owing to the great affinity which alcohol has for water.

The gas flame from a Bunsen burner is more reliable than the alcohol flame, but it is not without its limitations. The operator is always dependent on the gas company to furnish him a pure quality of gas, and he must watch the burner to keep it in perfect working order if he expects a uniform flame. Even at best, it is doubtful if gold coming in contact with any flame is not more or less contaminated thereby.

Then the manner of annealing followed by many operators is calculated to give unequal results, even with a pure flame. If a pellet of gold be picked up by the pliers and carried through the flame and then to the filling, as is so frequently done, nearly one-half the pellet is imperfectly annealed. The portion of gold grasped by the pliers is not annealed at all, and for some distance from the plier-points the gold is kept sufficiently cooled by the points to prevent perfect annealing. This accounts for much of the pitting on the surfaces of some gold fillings. A certain portion of every pellet is left non-cohesive, and when wear is brought upon the filling these little particles which were grasped by the plier-points flake off, leaving an imperfect surface. The operator does not notice this defect while building up the filling because of the fact that the end of the pellet most remote from the pliers is well annealed, and this, coming in contact with the gold in the cavity, adheres perfectly, and the whole pellet seems to mallet down to place in good condition. It is only when subsequent attrition on the filling discloses the flaked surface that the operator realizes there is something wrong with the density of the gold; and even then he is quite likely to attribute it to some inherent defect in the gold rather than to faulty methods on his part. This plan of annealing also occasionally leads to another detrimental effect. The operator, in observing the pellet in the flame, notes that it is dark in color for more than half its length from the plier-points, and attempts to get a uniform heating by holding it longer in the flame. This results in the

overheating of the pellet at the end most remote from the pliers, and the fusing together of the layers of foil at that point so as to present a harsh, unyielding mass, with which it is impossible to do uniform work. If an operator must employ the flame for annealing he would better use the smallest pliers obtainable, and grasp the minute corner of one end of the pellet and pass it carefully through the flame, or near the flame, till the other end reddens. Then, dropping the pellet in the gold drawer, he should pick it up again at the annealed end and gently heat the other one. In this way both ends are annealed; but even there is a lack of uniformity in such a method, and it also requires unnecessary time and undue manipulation of the pellet before it reaches the cavity. A pellet should be handled as little as need be from the time it leaves the gold-beater till it is placed in position in the tooth.—C. N. JOHNSON, *Cosmos*.

Ethyl Bromid Dangerous.

Our own experience with specimens from the best manufacturers is that, notwithstanding the utmost care in sealing and excluding light, they all decompose in a few months' time, revealing by a yellowish tinge the presence of free bromin. Hence, it would appear that the bromin element is held in association with the ethyl radical by a somewhat feeble atomic affinity, and that its decomposition, even in a sealed bottle and probably also in the human organism, is only a question of time; in the latter case possibly of a very short time, for Dr. Dickinson agrees with what is now the generally received opinion, that with this agent prolonged anesthesia is dangerous, for the reason, as is claimed, that the ethyl bromid effects a chemical union with the red blood corpuscles, with the result that their oxygen carrying power is impaired and partial asphyxia produced.

The facts as to ethyl bromid may be briefly summed up; it is an agent far swifter in action and much less unpleasant in its general effects than either chloroform or ether. Like chloroform, it depresses the circulation, and, owing to its interference with oxygenation, is far more dangerous than that agent for long operations; and less dangerous for brief ones, only because of its greater volatility and the consequent rapidity with which it is eliminated from the system. The absolute purity of the drug is essential to safety, but from specimens believed to be pure, because purchased through the ordinary channels from reputable manufacturers, dangerous and, in several cases, fatal results have followed. In view of these facts each practitioner must determine for himself the advisability of assuming the responsibility for its administration.—W. F. LITCH, in *Dental Brief*.

A Desirable Antiseptic.

As a deodorant and antiseptic for the sick room and for the dentist's office, Listerine stands pre-eminent. While it is equal to any and superior to most of the agents commonly used under such circumstances, it adds an agreeable aroma instead of an offensive odor to the surroundings; and is particularly well adapted to the lying-in room. It may be freely used in spray or lotion without stain or irritation as an agreeable and effectual detergent. It is also specially commendable in weak solution, as a mouth-wash and gargle for aphthous sores or a fungus condition of the gums, and bad breath; and for certain forms of indigestion—those accompanied by disagreeable eructations—a few drops of Listerine in water is a particularly grateful and excellent remedy. Moreover, according to a series of "Experiments upon the Strength of Antiseptics," by Dr. A. T. Cabot (*Boston Medical and Surgical Journal*), Listerine compares favorably with the most reliable agents for the rapid destruction of micro-organisms.—*The Sanitarian*.

Instrument Sterilization.

The only method of sterilization, one that is free from objections, is the use of formaldehyde gas. I have been using this agent for the past six months with most satisfactory results, and find it to be one of the most reliable sterilizers known, and one capable of almost universal application. With the Moffatt lamp, or generator, I use the Lilly formaldehyde sterilizing oven. This consists of a neatly enameled iron case lined with asbestos; into this the gas is conducted from the lamp just described. The oven is ten inches long, nine inches wide and twenty inches high, and contains a wire shelf or rack on which the instruments are placed for sterilizing. It requires very little care to operate, and if forgotten no harm is done the instruments, as they may be left in it indefinitely. The gas can be generated in the morning before beginning work, and by keeping the door of the oven closed, except to admit or remove instruments, one charge may be sufficient for the day.

The instruments are first washed and dried, then placed in the sterilizer for from twenty to thirty minutes, or until needed. In addition to the certainty it affords that all bacteria will be killed, the process possesses other advantages which recommend it; instruments may be left in it indefinitely without danger of injury to the temper or polish; this cannot be said of any other sterilizer with which I am acquainted.—T. C. VAN KIRK, *Dental Brief*.

BRIEFS.

Ethyl Chloride for Hemorrhage.—It is stated that a spray of ethyl chloride will arrest hemorrhage from the extraction of a tooth. Try it.
—*Dental Review*.

How to Prevent Zinc Bubbling when Pouring a Model with a Core.—Put the core over a gas furnace and heat almost red hot, then place in position and pour die.—*Penn. Dental Journal*.

Jumping Solder.—In placing foil scraps in a crack where you wish to span solder, use scrap mat gold, it will stay where put and not ball but make a satisfactory joint.—*Dr. Prescott Niles*.

Aluminum Crowns.—I make aluminum crowns in one solid piece, with a Morrison outfit. They do not corrode, give entire satisfaction, and for cheap work are unexcelled.—*P. A. Skeen, Cosmos*.

To Remove Black Stain from Tooth Plates.—The black stain found on plates after use may be removed with naphtha, and then I use a 3 per cent. solution of hydrogen dioxide to sterilize.—*Dr. Beecher, Dental Brief*.

To Prevent Plaster from Adhering to Flask.—Dr. Buckland paints the inner surface of flasks for vulcanite work with a solution of whiting, which allows the plaster to be removed easily and protects the flask from corrosion.

To Prevent Weighted Rubber Irritating.—To prevent the metal in weighted rubber from irritating the gums, I use non-weighted rubber for the last layer when packing my flasks. Then I get a smooth gum-surface with the desired weight.—*John K. Morse, D.D.S.*

To Prevent Cracking of the Gum During Vulcanizing.—To prevent cracking of the gum during vulcanizing it is essential that the case should be packed *as soon as possible* after it is flaked, and that the plaster should be kept *as wet* as possible, no *dry* heat being used.—*Mr. Channing, Dental Record*.

To Strengthen Poor Plaster.—If so unfortunate as to have a batch of plaster that will not set hard, a little fine ground common stucco mixed with it will make it good at a cost of a few cents. Better to mix them as needed, as too much stucco will make a cast rough, while more can be added by flasking.—*A. Secor*.

Circumstances Alter Cases.—Whenever the statement is made that any filling material saves a tooth under all circumstances because it *is it*, without respect to the varying individual conditions of tooth structure, relative size of cavity, location of it, then a prophet has arisen who has not seen the day yet.—*J. P. Root, Western Journal.*

Hints on Continuous Gum Work.—Among important points are (a) that the body must on no account be over-fired, because if so the result is that it comes out brittle and porous. (b) That *hard* not soft platinum should be used for the base, to prevent warping. (c) When soldering use a *very small* piece of pure gold.—*G. N. Rose, Dental Record.*

To Prevent Polishing Wheels Splitting.—Brush wheels, etc., with wood center should not be left in water longer than necessary, nor should they be left on the mandrel. Being put on dry, then soaked, the wood swells and something must split or warp out of shape. Many a wheel is condemned when it is not the fault of the make-up, but of its user and abuser.—*A. Secor.*

The Dentist Should Decide What is Best.—When you are fully recognizing the obligation involved in the discharge of your duty to a patient, you must recognize the obligation you owe yourself. You have no moral right to do anything simply because requested to do so and your remuneration depends on so doing. Far better lose the patient; the gain in the end will be yours.—*J. P. Root, Western Dental Journal.*

Carbolic Acid in the Treatment of Erosion.—As the result of a series of observations extending over a number of years, I will say that there is nothing so effective in the treatment of what we used to call spontaneous abrasion as carbolic acid. If the affected surfaces are kept clean—aseptic—and treated with carbolic acid, not only will sensitiveness be overcome, but erosion will be held in check.—*J. Y. Crawford, Dental Brief.*

Wooden Mallets Objectionable.—The wooden mallet used by some operators is ill adapted to the purpose of condensing gold. Unless it is so large as to be unwieldy, it has not sufficient weight to be effective, and in order to gain anything approaching adequate density it requires many blows that the process becomes exceedingly irksome to the patient. It is not only inefficient, but is objectionable in point of comfort.—*C. N. Johnson, Cosmos.*

An Objection to Casting Aluminum.—The greatest objection to casting aluminum direct to teeth is because the platinum pins will be affected by the fusing aluminum, being thereby rendered brittle, causing

the teeth, with but very little force, to come off the plate, the pins breaking so that half is respectively left in the tooth and plate. The platinum pins present an appearance like ink which has been acted upon by an acid, corroded.—*Paul Steinberg, Items.*

Shellac for Felt Wheels and Cones.—How many find their felt cones and wheels get out of shape, and wear out and break in a short time? If they are soaked in shellac varnish that is about as thin as water, says Dr. Bebee, and then allowed to dry thoroughly before being used, they will keep their shape, and last a long time. This is especially advisable with the cones as they are very apt to break in two before they are worn out. It is not so necessary for wheels.

Do You Advise that a Tooth be Devitalized Before Crowning?—It depends entirely on the nature of the tooth to be crowned. If after preparing a tooth for a crown, I consider the pulp to be in danger of thermal shock, I would certainly devitalize, but I do not believe in the wholesale devitalizing treatment as set forth by some practitioners. I try to use the same judgment as I would in filling a tooth where the cavity extends into the pulp chamber.—*Dr. Gilbert, Dental Brief.*

Holding a Broken Plate.—To hold in place the broken pieces of a denture preparatory to mending, says Dr. Tickner, fill a lower impression cup with softened modelling compound as to take an impression. Press the plate of teeth in this, and bring the edges of the fracture together accurately. When the compound has become hard, dip the plate in water, and fill as when making a model. As soon as the plaster is hard soften the compound and remove it, and proceed as the case requires.

Preparation of Cavities for Amalgam and Cement.—Many operators who practice daily the use of amalgam, gutta-percha and cements never take the time or trouble to excavate and prepare cavities for such materials as they would for gold. As they slight in preparation of cavities, so they slight in the introduction and finish of material. Some even boast of filling as many as half a dozen large and medium size cavities in less than an hour's time. Not much to boast of, but much of which to be ashamed. The profession suffers by such methods of practice, and so does the public.

To Remove Teeth From Rubber Plates.—When it is necessary to remove teeth from old rubber plates, Dr. Sylvester places the case in a small dish, covers with glycerin and places over a burner till quite hot. The glycerin will soon soften the rubber, so the teeth can be easily removed with but little force and without endangering the pins or teeth ;

wash the teeth in water, which will remove all traces of the glycerin. Should there be stains on the teeth after removal, or small pieces of rubber between the pins, immerse them in nitric acid for a short time, which will remove all stains and rubber.

Formaldehyde: A Warning.—We believe a word of warning is urgently called for with reference to the extensive use now being made of various cements containing formaldehyde, in some form, for capping and “preserving” pulps in all stages of irritation, inflammation and degeneration. Comfort and peace may often follow this procedure; but the peace will be found, in many instances, to be the peace of death, and living matter will not always remain at peace with that which is dead. We look for a bountiful crop of abscesses from this method of treating inflamed pulps. In fact, we have heard of not a few already.—*The Dentist*.

The Malleter.—Usually a young lady assistant is best suited to this purpose—one who has no intention of studying dentistry as a profession. The reason for this is that to be an expert malleter the assistant should have no interest in the operation except to use the mallet. A student of dentistry naturally becomes interested in the progress of the filling, and is inclined to divert the attention occasionally to the tooth instead of concentrating it solely upon the end of the plugger handle. This diversion results in imperfect work, and any imperfection on the part of the assistant renders the hand mallet almost the worst that can be used.—*C. N. Johnson, Cosmos*.

How Intemperance in Eating Affects the Dentist.—Intemperance in eating does not seem to be anything in which your patients have any interest, but they have and to a great extent. If at luncheon (I call the noonday meal luncheon, well knowing none of you are so plebian as to eat dinner at noon) you crowd your abdomen full of food, be it at a ten-cent chop-house or a two-dollar *table d'hote* dinner, you are not in a physical or mental condition to give proper attention to your patient. Your brain is sluggish, your liver inactive, your whole person craves rest, and you are doing your patient and yourself an injustice in allowing your intemperate appetite to be appeased.—*J. P. Root, Western Journal*.

To Strengthen a Badly Decayed Root for Crowning.—Remove all the disintegrated dentine and enlarge the opening into the sound portion near the apex. Into one end of a platinum tube solder firmly a screw-threaded wire; cut a slot in the open end of the tube, and with screw-driver tap the apical portion of the root with the threaded-wire end of the tube. Remove by unscrewing, cover the threaded end

with oxyphosphate cement and screw firmly to place. Oil the outer surface of the tube to prevent amalgamation, and fill around it with amalgam firmly packed in. The root being thus restored to its original strength, is ready for crowning, the post and disk method being recommended, the post being cemented into the tube, which is firmly anchored by screw, cement and amalgam.—*H. H. Johnson.*

Gastric Irritation Due to Decayed Teeth and a Septic Condition of the Mouth.—Mr. E. Lloyd-Williams pointed out that gastric irritation was often improved by the extraction of stumps long before artificial teeth were supplied, proving to his satisfaction that the gastric irritation had been very largely due to the septic condition of the mouth. There was still a great number of dentists who clung to the old idea that a root retained in the mouth in some way or other kept up the contour of the face, and some people thought that it afforded a certain amount of stability for an artificial denture. He ventured to think, however, that great care was required in treating mouths of that sort, and that it was better to err on the side of extracting all stumps which were at all suspected of setting up any septic disease.—*Jour. Brit. Dental Asso.*

Cause of Gastritis.—Mr. Albert referred to mouth-breathing as being favorable to gastritis. Dr. Hunter said that the cause of gastritis in connection with teeth was apparently due to the swallowing of bacteria, but he thought there must be other conditions of the mouth, apart from sepsis of the teeth, producing secondary conditions of the mouth, that would naturally predispose to gastritis. The researches of Dr. Sinclair Thompson showed that the upper pharynx was practically a sterile cavity, and it followed that the air in passing through the mouth was not sterilized, and he presumed that mouth breathing would produce generally infective diseases in much the same way as caries and necrosis of the teeth. He mentioned several cases of loss of memory and synovitis, which had cleared up by an improvement in the conditions of the mouth.—*Jour. Brit. Dental Asso.*

Preparing the Peridental Membrane for Tooth Filling.—In some instances the peridental membrane is so weakened through lack of use that it is painfully responsive to mallet force. This is ordinarily brought about by the fact that when caries occurs the tooth becomes sensitive to mastication, and the patient involuntarily avoids its use to the end that the membrane, lacking its normal functional exercise, deteriorates in its resistive qualities so as to quickly rebel against the mallet. The remedy for this condition lies in subjecting the tooth masticatory usage in advance of the operation, by placing in the cavity a gutta-percha

plug to control the sensitiveness and instructing the patient to bring the tooth into active service. In this way the membrane may be so toughened in a week or ten days as to receive the impact of the mallet comfortably.—*C. N. Johnson, Cosmos.*

Shaping the Cavity for Porcelain Inlay.—In a large majority of instances I cut the palatal wall of the cavity entirely away. Generally this wall is more or less broken, and nearly always it is frail. I therefore cut it away freely, preserving the front of the tooth to the greatest possible extent, and do all of the work from behind or from the palatal aspect of the tooth. By this method there is generally little difficulty in so shaping the cavity that the gold impression is easily dislodged. Having adapted the gold and trimmed the margins, the little gold dish or tray is replaced in the cavity, and, *while in position, filled nearly full of a high fusing body*, just as described by Dr. J. Bond Littig. I have followed this plan for several months, and it is quite surprising how it simplifies the matter of removing the gold form and prevents it from changing shape.—*J. Leon Williams, Cosmos.*

An Incident of Office Practice.—Recently I had occasion to fill the root of an upper lateral incisor. After drying out the canal with hot air by means of the chip-blower in the usual manner, the patient complained of severe pain in the region of the eye. I did not attach to it much importance, but went on with the operation, after which he again called my attention to it. We also noticed a decided swelling of the cheek and lower eyelid, which became quite alarming to the patient.

The inference is that I had the point of the chip-blower fastened in the pulp-chamber so tightly that it would not allow the air to escape; on the contrary, it passed through the foramen and found its way into the soft tissues. The swelling went down considerably next day, and shortly afterward disappeared altogether.

The lesson to be drawn from the above is to rest the hot-air syringe lightly in the pulp-chamber so as not to preclude the air from returning.—*Rudolph Erler, Cosmos.*

New Lining for Vulcanite Plates.—Rubber dam as a lining for vulcanite plates cannot be surpassed. You proceed as usual with your case and when ready for packing, first pack round the pins and flange; then cut a piece of red rubber the shape and size of your cast, large enough to come up as high as you will require your case when finished. Then lay a new, clean, thin piece of rubber-dam over this and cut out a piece to fit; remove and paint your red plate all over with good red or black rubber solder or cement on one side, being careful that it is all covered well with cement. Now take the piece of dam and place

it smoothly on the painted side of your plate; press well down; make it quite smooth, being sure that there are no air bubbles. If your dam has stretched, which it will, trim the edges to the red plate. Place your plate in the flask so that your dam will come next your cast. When you close your flask, be sure and see that the plate comes well up around the flange so as to hug close to the model and not allow any red rubber to be found inside. Close your case by dry heat. Use paper vacuums and not tin, as the dam will not harden over tin. Rubber-dam is better than gold for a lining, as it is a non-conductor, prevents sore mouths and makes a very tough plate almost impossible to break; so you make a thin, light piece of work.—*L. Crouther in American Journal.*

SOCIETIES

Missouri State Dental Society.

THE thirty-fifth annual meeting of the Missouri State Dental Association will be held in the Warwick Club Assembly Room, Kansas City, Mo., July 11, 12, 13, 14, 1899. Interesting clinics and programs will be presented. Reduced railroad and hotel rates have been secured. A cordial invitation is extended to all members of the profession.

B. L. THORPE, *Cor. Sec'y*, St. Louis.

A Dental Congress in 1902.

WHEREAS, The Ohio Centennial is to be held at Toledo, Ohio, in 1902, and naturally many of our profession will be in attendance; and

WHEREAS, The Toledo Dental Society being at the home of this great enterprise, we should agitate the holding of a Dental Congress some time during the centennial session; therefore be it

Resolved, That our President appoint a committee of three to bring this matter before the next meeting of the Ohio State Dental Society; also that this resolution, if adopted, be published in the OHIO DENTAL JOURNAL.

Introduced by Dr. L. Canfield and adopted unanimously.

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CONTRIBUTIONS.

A New Use for the English Foot Bellows.

BY J. J. RAPP, MADISON, IND.

I USE the English foot bellows in the hands of my assistant to keep fillings from over-heating while dressing down and polishing with disks and polishing strips. A continuous blast of cool air being thrown on the tooth during the whole operation of polishing is a great *comfort to the patient* as well as a *convenience and time saver to me*. I use an ordinary mouth blow pipe (which gives my assistant a sufficiently long point to work over my hands with ease and comfort) attached to a quarter inch rubber tube and with a reducer attach this tube to the rubber tube that comes with the English bellows.

I have also made a brass frame attached to a board nine inches square. On the latter I fasten the bellows and at the height of twenty inches on the cross-bar or brass frame I attach the expansion bulb and then carry the rubber tube to the top of the brass tube and pass it through a brass thimble which is attached by wire to the end of the brass frame. The rubber tube should work freely through this thimble and when not in use can be drawn down to the reducer thus making a holder for the small tube and air point.

I consider this an invaluable help to any one who keeps an assistant and would not be without one for any money.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

A Peculiar Set of Teeth.

BY S. P. BUCKLEY, PH. G., D.D.S., CHICAGO.

As I look through the dental journals, from time to time, I notice articles written by various dentists upon the peculiar conditions of the oral cavity which they notice in their practice. Of course it is not the ordinary conditions, which we naturally expect to exist when a patient applies to us for treatment, that interests us so much as the rare or peculiar conditions.

Thinking perhaps some of the readers of OHIO JOURNAL may be interested in these exceptional cases, I cite a certain case of a lady who came to my office for the purpose of getting her teeth cleaned.

The first thing I noticed peculiar about the lady's set of teeth was the absence of the lateral incisors on either side of the superior maxilla. This aroused my curiosity and I began to look for further anomalies. I next noticed that the right superior cuspid was a deciduous cuspid and was quite loose by the absorption of the root. The lady being about thirty years old, I thought perhaps the permanent cuspid had become impacted, or that there might be some other cause for the non-eruption of the tooth. I began to look for the cause, and to my surprise found the right permanent cuspid occupying the exact place of the second bicuspid with the tooth missing. I now questioned the patient and she said a dentist previously extracted the second bicuspid to make room for a tooth that was erupting and coming out in the cheek. The tooth proving to be the permanent cuspid and had now come down and occluded properly with tooth below, so that in looking at labial side of cuspid you could scarcely distinguish it from buccal of second bicuspid unless you examined closely or noticed the occlusal surface. All other teeth in the superior maxilla were properly arranged.

In the inferior maxilla, I found the left lateral incisor missing, I have often noticed only three incisors in the inferior maxilla, but I do not remember of ever seeing a case where both superior laterals were wanting. I have seen patients having a deciduous cuspid at this age, but never saw a permanent cuspid occupying the place of a second bicuspid. The case was so very

rare, having so many anomalies that I persuaded the lady, who was very kind about the matter to let me take a modelling compound bite of maxillas and now I have a model of both maxillas in my office among my curiosities.

Professional Ethics.*

BY HENRY BARNES, M.D., CLEVELAND, O.

THE Century definition of ethics is, "the science of right conduct and character, the science that treats of the nature and grounds of moral obligation, and of the rules which ought to determine the conduct in accordance with this obligation. The doctrine of man's duty with regard to himself and the rights of others."

Shakespeare says, "To thine own self be true and it must follow as the night the day, thou can'st not then be false to any man."

The world owes to each man a living and every man owes to the world his very best effort. Because of the selfishness of man a rule seems necessary to govern action. Were selfishness eliminated from man's nature this rule would not operate, for each would naturally recognize the rights of others and act accordingly. The more selfish a man is, the more need he has of this restraining rule or law, and the more unselfish he is, the less need he has of this law. In this statement we enunciate only a truism, but so prone is man to error and so seldom does he think to a purpose, that it seems necessary to re-state these old truths from time to time.

As a dentist, what is my duty to myself, and what is my duty to my fellow-practitioner? This is a burning question, and must be satisfactorily answered before we may truly call ourselves a liberal profession. Our recognition as such will not come from without our ranks until we shall have purged ourselves of unprofessional conduct, and recognize ourselves as such by righteous professional conduct.

In my intercourse with the men of my profession, I am surprised at the almost utter lack of recognition, on the part of

*Read before the Tuscarawas Valley Dental Society.

many, of true ethics. We are not unmindful of the progress that has been made during the past thirty years or more, and for this progress we are indebted to a few generous souls who have come down to us through the mists of the past, blazing their way, as it were, through the ranks of selfishness. All honor to these noble men, for, previous to their entrance upon the stage of action, it was not possible for the then profession to meet as do we to day, for the discussion of such a subject as here presented, neither would they exchange views on any other subject of interest to themselves. And as for clinics, as we have had them to day, every man was keeping to himself the little secrets of which he became possessed, guarding them with jealous care lest his competitor gain an advantage. Did another dentist call upon a competitor, he was prevented from entering into the sanctum sanctorum, or inner court, by the prohibitory sign, "No admittance, private." The removal of this sign from dental sanctums was the first step in ethical education. You and I to-day are reaping what they have sown. Let us not forget in our enthusiasm of the present to accord the meed of praise to these men. The reforms which they inaugurated must go on until our noble profession is purged of all that tends to lower it.

We desire to call your attention to a subject which is prominent in the dental profession to-day, the young man. Starting with an education superior, made necessary by the exigencies of the time, and therefore more capable than his forefathers, he confronts the profession. Gentlemen, he does not ask what you are going to do with him. He proposes to cut his swath regardless of your presence in the field. This may not be a very palatable statement but it is a fact nevertheless. We have noted that certain of our profession, who have occupied certain territory during their professional lives, have come to believe no one shall invade that territory without their consent. When a young man enters such territory, regardless of this usurped title, there is usually professional war, long and bitter.

For this condition of affairs there is absolutely no excuse. The young man came into this world by no act of his will; he grew to manhood, and chose the dental profession as a means of earning a living for himself and future family; he entered a regularly organized dental college, and after several years of study and technical education, was presented with an earned

diploma which gave him the right to practice his chosen profession. He is a citizen of the country, complying with all her laws, paying taxes and presenting his body, if necessary, as a sacrifice in defence of her honor; that country has guaranteed to him the right to "life, liberty, and the pursuit of happiness." Now where may he locate? Wherever he may elect, and no man or men have the right, legally or morally, to say him nay.

Now, you men of years and occupancy, will you make professional war upon this young man? Will you speak all manner of evil of him, or by shrug of shoulder or curl of lip, convey your contempt of his attainments and right to practice, thus seeking to belittle him in your and his community? Such a course can have but one ending, disastrous to him who first inaugurated it. The young man is not always wholly blameless, and it too often happens that he enters a community with a blare of trumpets and a declaration to "teach the old fogies something pertaining to dentistry." He is what the world, in slang phrase, calls "too fresh," and when "too fresh" and "too salt," clash, there is apt to be a spilling of whatever of good there may have been in their natures.

This condition of affairs is confined to no special locality, but may be found to exist in many towns and cities throughout the length and breadth of this broad land. The professional man will, in his calmer moments, admit the unwisdom of such a course, and selfishness blinds him to all sense of right. Throwing wisdom to the winds, he mounts the fiery steed "Jealousy," quite unmindful of the fact that she has never been broken and will lead him a mad race to professional destruction. "Whom the gods would destroy they first make mad."

What remedy shall be offered to prevent this unprofessional conduct? The Good Book says, "Come, let us reason together." In reason we have a potent friend, and when men will reason together the first step in prevention has been taken. Remember that we have a team of no mean quality, the steady old horse and the fiery, untamed broncho, which, properly harnessed, is capable of hauling any load, but woe be to that team if you fail to recognize the nature of each. The old horse needs the spurs, the broncho requires a bit. Let each act in his especial capacity to the other. Let the older man recognize the fact that the younger will, by reason of inexperience, fall into grievous error.

Let the younger recognize another fact, that the older by reason of experience becomes cautious and conservative. Could we but comprehend these facts so as to take them into our professional lives, most of the trouble which tends to vex the professional man would be done away with.

Mankind gains immensely by association with others. This fact has led him to form associations of various kinds that he may meet his fellow and exchange views. The oftener he meets within due bounds, the stronger he becomes mentally, morally and physically. He views life from a higher plane. His conceptions are broader, and freer from those petty narrownesses which environ him in self, he becomes a man in fact as well as in name. If this proposition be true, why not carry it to his logical conclusion? Why not the dentists of every town, even if there be but two or three, form an association for mutual benefit and improvement in a professional way? Why not call out the best that is in man instead of the worst? These associations need not be formed with written constitutions and by-laws, but may be informal affairs. This being done, those who now wage professional war would exert their moral forces toward the uplifting of themselves and to the honor of that profession of which they are members. The title, D.D.S., does not dignify any man. He either dignifies that title or degrades it, according to his professional or moral conduct. Certain of our profession tower above their fellows, not because they are of the profession, but by reason of patient, persistent plodding toward some high ideal, ennobling the man and honoring the profession. The people with whom we come in contact from day to day, form their estimate of the worth of our professions from impressions which they gain from the individual members thereof. Do the members of that profession in any town stand aloof from each other, wage wordy battles, or descend to billingsgate, then is the estimate of the people of that place given in like manner. Do they fraternize, assist and support each other, honoring their profession by gentlemanly bearing and conduct, then is the estimate of their profession like unto themselves.

There is a law of nature which is inflexible, "Like begets like." Get around it, you cannot; deny it, you may, but the fact remains. We claim to belong to the learned and honored professions, but deny our relationship by our unwise acts. Of what

use is knowledge if not rightly used? If we are merely mechanics or good jewelers in our several localities, we have fostered the growth of that belief. If we are thoroughly professional in that country's thought, it is but the reflex of our professional lives.

In personal associations, we must not forget that men are but human. Passion, prejudice and jealousy often hold sway when better counsels should prevail. Charity must enter with us if we would accomplish the fullest measure of our desires. Let each recognize the true worth of the other, rather than seek the foibles and follies of men. There is always common ground on which to stand, and it is our business to find that ground. Our noble profession will rise proportionately as we rise,—no faster. Let but the dentist of one town associate and fraternize for personal improvement, and the dentists of the surrounding towns will catch their enthusiasm. Dentistry will in these towns, in a short time, secure a professional reputation second to none. More than this, those towns now supporting two or more dentists indifferently, will, by reason of a change of opinion or sentiment, brought about by the more professional conduct of dentists, afford a financial remuneration far in excess of that now enjoyed. Mechanics and jewelers will be paid the market rate, professional services in like measure.

Some there may be who will entertain a contrary opinion than here expressed, and may cite the law of self-preservation. We seek not to abridge this law in the least, but we do believe that the strength of this law lies in its interpretation. Taking even a selfish view of the case, it would seem to be more productive of self-advancement to follow a purely professional course. We have in mind two noted singers, formerly prominent on the operatic stage. One by reason of her magnificent voice, drew the applause of the audience, but it ended there for she was noted for her extreme selfishness. The other was not less honored but added thereto was the esteem and love of those before whom she sang, for she was in every sense a lady. Anna Louise Carey will live in the hearts of her countrymen forever.

PROFESSIONAL TREATMENT OF PATIENTS.—The dentist is supposed to know something of his profession. He is, therefore, to be consulted respecting that which he knows,—not dictated to. Many men lose the respect of their patients by failure to comprehend this fact. Is he known as "Doc" among his patients,—

does he permit this without the slightest objection,—does he haggle ad nauseum concerning fees,—is he in competition with his fellows,—how can he permit these things? How can he permit these things and still claim to be professional? How can he expect his patients to so regard him? Gentlemen, we can not call ourselves professional and permit these unprofessional practices. We must revolutionize sentiment of such communities by a good liberal injection of professional ethics. First, “Think well of thyself if thou expect others to think well of thee.” Let us learn a lesson from our medical brother. Recall, if you will, the most sought and highly honored medical practitioner in your several localities. Are they not the men who are most insistent upon their course of treatment, and who will not submit, in however small degree, to the dictation of patients. He is master of himself and therefore master of others. Dentists must educate people along professional lines. We hear much of the need of certain literature to educate our patients, but if this be not supplemented by the education in the office and at the chair, it were worse than useless, for it only the more firmly convinces our patients that we have no place in the profession’s honor. Marry your conduct and your literature if you would succeed. Much has been written and more has been said upon this subject, but it was all epitomized by the Master when He said, “Do unto others and you would that men should do unto you.” And, gentlemen, we should require no other code.

Painless Extirpation of Live Pulps Without Cataphoresis.*

BY P. M. WILLIAMS, D.D.S., RUTLAND, VT.

WITH the increasing tendency to the removal of all pulps that seem likely to die of themselves within a comparatively short time, there comes a demand for some practical and reliable method by which this operation can be performed without pain and without injuring the important pericemental membrane. Devitalization by means of arsenical compounds has proven to be a very unsafe method, to say the least, permanent injury to the pericementum often resulting. We naturally turn to cocaine for

* Read at the Vermont State Dental Society, March, 1899.

a solution of the problem, and applied cataphoretically the great obstacle to its use, the impenetrability of dentin, is overcome. The use of cataphoresis, however, attended by many difficulties, and it is safe to assume that owing to these difficulties there are comparatively few dentists using the method to-day. Partial devitalization with arsenic and the removal of the greater portion of the pulp with crystals of cocain or a strong solution is usually painless, leaves the pericementum intact and presents so few difficulties as to recommend itself over cataphoresis in ordinary practices. It is often desirable, however, to remove the pulp without the delay necessary in the use of arsenic, and in cases of this kind I have used a solution of cocain-hydrochloride in alcohol and ether. This solution either owing to an increased capillarity over the fluid in the dentinal tubuli or some other cause, obtunds thin layers of the dentine so that they may be removed or drilled through, applying the solution as soon as the slightest sensation appears, until the pulp is reached without pain. After gaining access to the pulp a few cocain crystals dissolved in the blood that follows puncture, and carefully pumped into the canal with a broach obtunds the remaining fibres. Either of these methods is extremely simple, safe, and requires little time.

Odontological Society of Cincinnati.

REGULAR monthly meeting, Friday, Jan. 27, 1899, President Rose in the chair.

Previous to the reading of the essay for the evening, Dr. Grant Molyneaux, of Cincinnati, presented an interesting case of cleft palate.

The paper for the evening was then read by Dr. J. S. Cassidy.

Questions of Practice.

BY J. S. CASSIDY, M.D., D.D.S., COVINGTON, KY.

HAVE you investigated the value in practice of the chemico-metallic method of filling root canals? Theoretically, the process is correct therapeutically; but is it so, practically? In the writer's experience with it, although using it principally in those canals

that are not exactly filled by other means, it has been almost an unanimous success.

Judging from the evidence of current literature in our journals, formaldehyd is still regarded as worthy of respectful consideration. In the estimation of its friends it has no equal, as an all 'round combined disinfectant and antiseptic. What say you, pro or con? The writer thinks that its virtues, through the strong affinity for nitrogen and sulfur compounds, are exhibited as antagonistic to albuminous fermentation of carbohydrates. Therefore, formaldehyd is indicated in pus forming conditions, and as a mummifer of albuminous material; but, either as a preventive or destroyer of acid forming conditions, it is of doubtful utility.

What think you of cocain hydrochlorid solution, dissolved in ether, as a dentinal obtundent? There seems to be something in it; the erratic nature, however, of cocain itself, must dispose this preparation to be often discouraged in its efforts to please us. At times it seems to act all right, and at other times causes bitter disappointment.

In the November number of the *Cosmos*, Dr. Lennox Cartis states, that in the use of volasem as a pre antidote to cocain he has overcome all fear of the many-sided and unwelcome effects which are too often induced by the latter drug.

The name "volasem" seemed queer; 'twas not in the pharmacopeia, and druggists knew nothing about it. The writer, in despair, was about to ask Dr. Curtis to kindly tell us what it is; but Dr. Kirk, when here, incidentally remarked that he understood that volasem is a proprietary preparation, the active principle of which is physastigma venenosum,—calabor bean. Calabor bean, also known as "ordeal" bean, is the physiological antidote to belladonna, and inasmuch as belladonna reduces the power of the pneumogastric nerve, and other nerves of similar functions, the key to the value of physostigma in small doses in preventing, according to Dr. Curtis, the untoward symptoms of cocain intoxication, may be found in its stimulating influence on these controlling nerves.

In conclusion, permit a few remarks on liquid air.

Liquid air has been known for about ten years, and careful tests, on a small scale, have clearly shown that many physical phenomena connected with its future possibilities as a useful

agent are not merely theoretical ; but the great expense of producing it heretofore placed it beyond the reach of commercial enterprise. From the reports, however, we learn that Prof. Chas. Tripler, of New York, claims to have devised apparatus by which it can be produced at an expense of three or four cents a gallon. Liquid air is exceedingly cold, approximating the almost absolute zero of space. All gases when under the influence of sufficient pressure and the temperature pass the critical point of maximum density, and assume the liquid state. In this condition the substances are not elastic, as gases are ; and do not expand by removal of pressure, as gases do ; they simply evaporate on exposure, just as water does. A great amount of vapor is developed thus, from liquid air, even at common temperatures, but the volume of the liquid itself does not diminish as rapidly as one might suppose ; by the aid of heat, however, under certain circumstances, its anxiety to become a gas again enables it to exert one hundred times the force of steam. It may, therefore, be used as a substitute for all sorts of motive power, and also as a powerful explosive.

Prof. Tripler asserts that suppurative processes are cured, and cancers destroyed, by spraying the parts just once with liquid air.

Perhaps in the near future a favorite atmosphere, in original packages duly labeled, from either the balsamic pine woods, or stimulating mountain tops, or fragrant orange groves, or invigorating breezes from o'er old ocean's waste, may be brought to us at a trifling expense, which we may breathe at quiet leisure in our pleasant homes, and which at the same time by its silent presence may drive away the unsightly electric fans, refrigerators, and the suggestive odors of disinfectants, pleasing all the senses ; besides adapting itself to the performance of other duties too numerous to mention.

Indeed, if one half the claims made for the future usefulness of liquid air are true, it will prove the culminating wonder of this wonderful nineteenth century.

DISCUSSION.

DR. C. M. WRIGHT: I see nothing in the paper to criticise. Dr. Cassidy has asked some questions in regard to the use of certain things, for instance, Weld's points, and cocain and ether.

I have tried both of those. When I first began using Weld's points I thought I had struck the finest thing out; the first forty cases seemed to be successes; after a little, however, I came to the conclusion that it was more a mechanical than a chemical treatment, that the points themselves were very well adapted as mechanical appliances. Now instead of using the acid that comes with these points, I simply use gutta-percha, chloro-percha, just the same as I would any other points that were mechanically suitable; they seem to be very well adapted, in fact better instruments than I can file down myself; so I get them for that purpose.

As to cocain and ether, vapo-caine, I tried that at Dr. Cassidy's request numbers of times, and as he seemed to think in his own experience, or at least in the experience of those who have spoken to him about it, in some cases it seemed to act very well; in others, I could not see any effect at all; just as with the use of cocain; sometimes a 20% solution seems to have some effect on exposed pulp, or a slight effect; sometimes does not at all. So far as my experience is concerned, in using the crystals of cocain, sometimes it don't seem to have any effect in my hands where the conditions would appear most favorable for the application; but when we come to deal with pain, we are dealing with something that we can't explain exactly, can't account for it. Our knowledge of the *modus operandi* of the production of pain is limited at present.

What we need, it seems to me, and one of the things that we should attempt, is something that will absolutely and locally paralyze all these nerves that respond as pain in teeth.

It is one of the things in the *materia medica* that we must have, some definite, absolute agent that is sure when applied to the pulp to destroy pain, that will certainly produce analgesia of the organs involved. Another thing that we need, and it seems to me is a growing need, is a penetrating substance of good color that will immunize or place the tooth in a condition of immunity. The teeth being situated in the living mouth, wherein flourish in great variety living organisms, our present method of trying to disinfect the mouth by taking antiseptic solutions, or listerine, or bichlorid of mercury, is a merely temporary expedient, useless except for the purpose of at the time of application cleaning out the mouth for a second, or five seconds; but we do not thereby produce any effect upon the tooth or teeth, *per se*.

Now, if we could find something like nitrate of silver, but with a better color, that should penetrate the tubules of the teeth, affecting the vitality of the pulp, and make the teeth immune, no matter what their environment, it seems to me that is the second, or perhaps great demand.

To-day we are dependent upon experimentation; and the better we cut, the more we cut away, the more we restore with some other substance, the better the results we obtain! That is not the highest aim of our profession, and of our professional lives. And as we grow older too, we get lazy, don't want to cut so much; besides it has a serious influence on patient as well as operator. That it is the best we have to day; but it is not satisfactory; it is not all we desire.

At some future day, if Dr. Cassidy will keep on with his theories,—no! I won't say theories, but his work along this line, perhaps he or some other chemist will give us some substance that will accomplish the ends sought in the way of preventive dentistry. Why not preventive dentistry, as well as preventive medicine? Then we will stand up before the medical profession, and tell them, "You have been talking of preventive medicine, building your hospitals for the isolation of consumptives, etc., but we have found something that stops disease!"

DR. H. C. MATLACK: Dr. Cassidy asks, "What do you know of formaldehyd gas?" If reports are true this agent will bring about the result that Dr. Wright is looking for, not the gas, but something which is obtained from the gas. It is a good thing, because it comes in three forms, formaldehyd gas, formalin, and Schering Bros., chemists, have made what they call "paraform." The formalin is boiled or heated, boiled, I suppose, to a crystalline powder; and this powder is made up in tablet form and called paraform. The principle ingredient of all these new antiseptics, mouth washes, etc., is formalin. Paraform may be pulverized and mixed with oxid of zinc, and then with the acid worked up in the root canals, and the heat of the tooth will gradually cause it to become volatile, and penetration of the gas will, as I understand it, keep the parts thoroughly aseptic indefinitely. If this be so, it seems to me that this is an antiseptic and disinfectant which is going to take the place of all others, not excepting carbolic acid.

DR. J. S. CASSIDY: The influence which formaldehyd has,—

and I speak of formaldehyd using it as generic term for all of the preparations,—it attacks nitrogenous and sulfur compounds and forms new compounds of them, in that way destroying and thus disinfecting gelatinous matter; as Dr. Matlack says, it forms chemical unions with such compounds and they remain permanently disinfectant; therefore this disinfectant prevents a return of fermentation. What I thought of is, that it does not seem to have that effect as a disinfectant or antiseptic, either one, on carbohydrates or starchy matter; therefore, it would not be indicated as a treatment to secure such absolute results as Dr. Wright is wishing for in the prevention of decay.

DR. O. N. HEISE: Dr. Matlack made a statement which I think it my duty to antagonize, viz: that formaldehyd 40% solution was not caustic. Why, it is worse than carbolic acid, about the worst thing I ever handled. Only the last few days I employed it in the treatment of a badly decayed tooth; thinking I had the tooth thoroughly isolated and surrounded with the rubber dam, I employed upon it a 40% solution. I knew it was caustic, but thought I had taken such precautions as would prevent any of the solution getting out, and that poor patient suffered the agonies of the damned for two or three days, and the gum where it had been in contact with the formalin literally sloughed away. This painful experience convinced me of its caustic nature more than ever before, even in a 25% solution, it is decidedly caustic.

In regard to paraform, I have been experimenting, incorporating it in my cements, in the oxyphosphates, thinking it might overcome the tendency Dr. Cassidy has called attention to where you have the formation of ammonia, because we know formaldehyd is indicated where you have the formation of ammonia. In those cases I thought my cement fillings might last longer; especially where they are below the cervical border. Paraform has to revert to its original condition of formaldehyd before it can act as an antiseptic, or any of such properties can be manifested. Whether it will so revert I don't know. Then I also incorporated it with gutta-percha, thinking it might have some effect to make those fillings last longer. Whether it will do so or not, I don't know; we know that formaldehyd has a wonderful effect on gelatin and hardens it to such an extent that almost nothing will act upon it, as a solvent. You take a piece of gelatine and let formaldehyd gas come in contact with it, and it

becomes so firm you can hardly cut it; you can't remelt it again. I think it will do as to the gelatinous portions of the teeth. I believe Dr. Hart, of San Francisco, has worked upon that idea a great deal. It will treat all gelatine in that way.

In regard to vopocain, I have used for some time, but I don't know that it is any better than any other preparation of cocain. It does act very nicely if you will combine it with the pressure method, where you take a piece of rubber and force the vapocain into the dentinal tubule; then it seems to act well. You can anesthetize the pulp with it; if there is the least bit of exposure you can force it in and extirpate that pulp much better than by the ordinary cocain solution. The reason they have thought vopocain would be a good thing I believe is owing to the fact that if you take a capillary tube and one end place a solution of aniline dye, you will find that the solution will run up the tube for a little distance; if at the other end of the capillary tube you place a solution of ether, it will drive the aniline solution out, and the ether will penetrate. They worked on that theory, thinking a similar result would take place with the dentinal tubule and ether solution carrying cocain, that it would penetrate the dentinal tubule and in evaporating again, leave the cocain, and thus bring about its anesthetic effects.

DR. MATLACK: My understanding is that heat will cause paraform to revert. The heat of the body will cause it. It will dissolve readily in hot water.

DR. O. N. HEISE: I have not been able to make it dissolve.

DR. M. H. FLETCHER: I would add my testimony regarding the irritating qualities of formaldehyd gas. I would say that if Dr. Matlack don't care much about his mucous membrane and air passages, and will come over to my office, I will give him some of the 20% solution of formaldehyd which will stir up the mucous membrane of his nose so that it will not get over the effects for two or three days.

DR. GRANT MOLYNEAUX: In regard to formaldehyd: when it first came this way Dr. Cassidy gave a little of the 40% solution, which I used upon a patient who had been suffering with quite an extensive growth on the right alæ of the nose, protruding about a quarter of an inch. I took a 20% solution, and applied it with a tooth-pick as cautiously as possible around the the peduncular portion of the growth, and the growth went away

and has never reappeared. That has been four or five years ago, I guess. Anyway it has never returned, and it had been previously to that application operated on for three years at different times. It had been burned out with electricity, and by the strongest astringents they use, perchlorid of iron and acetic acid. I used the same application upon a wart upon the hand of a friend, and it disappeared, leaving no mark. But in regard to the irritating effect upon the Schniderian membrane, every time I applied that to the growth upon the nose, the annexing was simply distressing; and every time I have used it in my office the same results have ensued. I can sneeze for half an hour after having used it on others. I think the irritating effect of formaldehyd which has happened to my knowledge in so many different cases is such that it should be used with caution.

DR. O. N. HEISE: A word in reference to volasem, about which Dr. Cassidy spoke. Some of you hesitate to use cocain for the reason that you have had some bad effects from its use. I can assure you if you give the patient two or three drops of volasem, you can use cocain very freely. I have tried again and again in operations on the nose and around about the mouth and lips. You can inject very freely after thus using the volasem, and in fact *ab libitum*. Although I would not say *ab libitum*; but the volasem does seem to annihilate the bad effects of cocain. Volasem is administered thus internally, about two drops in a little water.

DR. H. A. SMITH: As to the use of vapocain, (solution of cocain and ether.) It seems to me that this promises something in the way of an obtundent. My experience has not been very great with it, but I have succeeded seemingly in obtunding hyper-sensitive dentine.

As to all of these agents I think if we understand their mode of operation and their draw-backs, we can use them more intelligently. We of course know the histology of the tissues of the teeth; we know the histology of dentine. If we use an aqueous solution of cocain, we simply apply it to the dentine; and we know that the water of dentine is all found in the organic portion. I say this, however, with some reservation. There is ten per cent. of moisture or water in dentine, it is said. Lately, I saw it stated that the lime salts of dentine contain no water at all; in other words, not the water of crystallization. I leave that for Dr. Cassidy.

We have then, let me say, 10% of water in the dentine, and with that the entire amount of water retained or contained in the organic portion, proto-plasmic portion, or you may say, the contents of the tubule; it is surcharged then with 3% or 40% of water, perhaps. Now, when we apply the aqueous solution of cocain, will that organic portion or tissue take up any more water? It seems to me it will resist an aqueous solution of anything. In other words, it is full, and will not drink any more! I have been reasoning about this to-day a little, because I have been using it in one or two cases, I mean the vapocain. I want to call the attention of Dr. Cassidy, or any other chemist present, to this my theory about it: we apply the vapococain and we have the ether evaporating very quickly; the cocain falls down upon the surface of the sensitive dentine in contact with it,—with the organic portion, loaded with water,—it falls down in the form of an amorphous powder, not in the crystal form, and that amorphous powder contains no water; placed in contact then with the tissue surcharged with water, the cocain is taken up very rapidly, affecting the sensitive portion of the tissue. It would seem if this be true that it must act upon the nerve fibres in this way; whereas with an aqueous solution it would not be active. It seems to me it does have the power of producing an immediate effect, from my stand-point of reasoning, upon the organic portion of the teeth. It was introduced and prepared for us by a chemist—not a dental chemist; and 'you know those people will obtain the obtundent we are looking for yet; if we don't get it for ourselves, they will for us, those experts. This is a secret preparation, I presume.

DR. J. S. CASSIDY: In applying vopocain, a good plan is, say in a typical case of approximal cavity of one of the incisors, to have a strip of rubber-dam about a quarter of an inch wide in position between the adjoining tooth and the one being operated on, and when you are ready to make the application, after wiping out with punk or some other absorbent the moisture present, apply your vapocain with cotton wool, or porous paper—blotting paper is pretty good,—and at once draw your rubber strip over it and connect it on the tooth so it will hold, and allow no external vaporization of the ether. Of course the ether being of less density than the moisture in the tooth, a good deal of vapor is produced; and if it cannot escape through the rubber-dam, if it

is sealed up thoroughly, the ether will penetrate, that is according to dynamics, into the dentine, carrying with it the cocain salt. Of course, we know that in a little while the ether will all evaporate somewhere; a good deal of it will escape around the edges, because it is not thoroughly or perfectly sealed by the rubber strip; it will disappear as ether, and it does not carry, I imagine, much of the cocain salt with it, because cocain, the hydrochlorid, is not soluble in ether alone. The preparation is a secret one, as Dr. Smith suggested; but I imagine that it is probably an alcoholic solution of cocain in ether; might be any other solvent besides alcohol, but I imagine such is the case. At any rate, these things disappear, leaving the salt deposited. I should not think it would if in the form of powder, but very minute particles which are hygroscopic to some extent, but will absorb moisture and will absorb or take up the water in the tubules, and having entered into these tubules quite a distance, probably it would have quite a good effect in anesthetizing the pulp. I think Dr. Smith is perfectly correct about that. So far as there being no water in the inorganic material of the teeth, that is very true, no water of crystallization; but is there any water in the gelatinous portion either? These parts get moisture probably by inhibition, no water of crystallization, not of constitution as water; though the elements of water are in the gelatinous portion of the structure.

So far as formaldehyd is concerned, it is about as uncertain in its effects on the mucous membrane as is cocain as an anesthetic. I have used it in all sorts of conditions, and with all sorts of people. I have removed warts from the hands by the dozen with it, and know its power pretty well. I have used it also as an application to impacted third molars, got them to slough, if possible, instead of using hydrochloric acid. In some cases it would have no effect whatever on the mucous membrane; in other cases it caused decided sloughing. Why is that? I cannot say. I have had patients, ladies of the most refined feelings, but the idiosyncrasies of some of them such that they were perfectly delighted with the use of a 40% formalin, or 40% formaldehyd, as an application to pyorrhea, run clear up under the gums so far as the probe will take it, leaving it there for a minute or two—a 40% solution? I have done it, after testing the cases so that I would feel safe in doing so; and the patients would

say, "How delightful that is! It is very irritating; I don't like the way it gets into my nose; but it makes my mouth feel so delicious!"

I have not cured pyorrhea with it; but I have stopped the flow of pus for several months at a time, and the swelling of the gums, too. They look quite nice. But other cases I could not use it at all. That is owing to idiosyncrasy. We all know the effects of drugs on different people vary very much. We cannot in some cases, apply tincture of aconite in the mouth, even as a little local liniment, without some dangerous effects on some people. I have injected a 20% solution of formaldehyd, and probably stronger than that, I have made the percentage by measurement, into the antrum in antral disease, and have the liquid come out through the posterior nares, or come through the nose, at least, and run down in a stream; and saw no injurious effects in such case; but I had tested the formaldehyd's strength before using it on that particular patient. It is very powerful. I hardly think it is caustic exactly, or even escharotic, because Dr. Molyneaux said, in narrating his experience in removing the growth from the nose, it left no scar there whatever, and no sore whatever.

DR. MOLYNEAUX: Not at all.

DR. J. S. CASSIDY: Does not leave any sign of a scar. After taking off these warts the skin was as healthy and as healthy as could be. I don't know that I have anything else to say. I am very much obliged to you for discussing the paper as much as you have; that is what it was written for.

DR. SWEENEY, Sec'y.

Southern Branch National Dental Association.

SECOND ANNUAL MEETING.

NEW ORLEANS, LA., FEB. 9-10-11 AND 13, 1899.

(Special Report, for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

*Continued from page 278.***Microscopic Effects of Cataphoresis.**

(ABSTRACT).

BY A. F. SOUTAG, OF WACO, TEXAS.

THIS interesting paper was illustrated by lantern slides, showing the penetration into the dentinal tubuli of colored cocain solution, used by the cataphoric process. It was shown very clearly that the solution on cotton placed in the cavity, without the aid of the current, does not penetrate at all. Also that, even with the current, it does not penetrate the layer of carious dentin. It is necessary to remove the carious dentin at least one point for the solution to penetrate the dentin.

In one case the cotton saturated with the colored cocain solution, was placed in the cavity, without removal of the carious dentin—a wisp of the cotton was allowed to reach over to a sound portion of the tooth from which the enamel had been purposely removed. The electrode was placed on the cotton in the cavity and the current applied. There was no penetration of the colored fluid in the cavity, but from the spot whence the enamel had been removed the fluid penetrated the dentinal tubules quite distinctly, the current having followed the wisp of cotton, taking the longer route towards the pulp, the carious dentin in the cavity opposing a barrier to its passage.

Oral Hygiene.

BY DR. J. P. CORLEY, GREENBORO, ALA.

He discussed the question whether immunity from dental caries can best be accomplished through local or systemic measures. If caries is of local origin, then our domain is restricted to the mouth and we can never hope to be more than therapeutists. If on the other hand it is due solely to systemic pathology, we

should be dental physicians, but if the pathogenesis of dental caries is both local and systemic, then the province of the dental profession is co extensive with that of general medicine. Dentistry and medicine should co-operate in the endeavor to secure sound teeth to future generations; and dentistry should have for its highest aim the prevention of caries. Quoting from Dr. J. Leon Williams, to the effect that acid-forming bacteria are the sole active cause of dental caries, and the predisposing cause to be found in that "peculiar condition of the bodily juices and cells, in which they are unable to repel the invasion of pathological micro-organisms," and the causes of caries thus both local and general. Dr. Corley next discussed the question as to which influence was the most potent. As against the statement that "the mouth affords an ideal hotbed for the culture and propagation of a hundred deficient kinds of pathological micro-organisms," he cites the facts that wounds in the mouth heal more readily than elsewhere; that animals always bathe their wounds in saliva, using the tongue to cleanse and disinfect; that the destructive acid products of the micro-organisms is being continually diluted with hundreds of times its own volume of alkaline fluids from the mucous and salivary glands.

Summing up, the doctor basis his theory of immunity on the trio-dietetic, physiologic and psychologic influences. Food should be such as to afford teeth, gums, mucous membranes and muscles of mastication abundant exercise, and should be taken leisurely and with mental relaxation; drinks should be free from stimulants and of a temperature such as not to interfere with the action of the fetgalin of the saliva. Physical auxiliaries, such as exercise, baths and ventilation, are essential.

As to psychological influences, a clear conscience has a wonderful influence on digestion, nutrition, assimilation and metabolism, and normal metabolism gives immunity from caries.

ABSTRACT OF DISCUSSION.

DR. COWARDIN does not consider vitality an important factor in the question of dental caries, or that the teeth have within themselves any inherent power of expelling decay. Teeth from which the pulps have been removed do not decay any more rapidly than those in which the pulp is performing all its functions.

DR. J. Y. CRAWFORD spoke of the care required by the first permanent molars. As soon as the crowns of these teeth are laid bare they should be washed and made perfectly clean—made aseptic—and the occlusal surfaces covered with a good cement so that all imperfections may be perfectly sealed. If the cement washes out it should be renewed as often as necessary until they have passed the period of susceptibility and become immune to caries, with perfect grinding surfaces. These teeth are made up at a period of life which renders them peculiarly susceptible to caries, but under the protecting cement fissures calcify and the surface hardens. What was a virgin field for the implantation of disease germs becomes immune if properly protected.

In closing the discussion DR. CORLEY said, in reply to Dr. Cowardin, that the gentleman apparently overlooked the fact that the teeth are still possessed of vitality after the removal of the pulp, and may render good service for years, but when, from other causes than the loss of the pulp, the tooth becomes really a *dead tooth*, then it is soon cast off. Nature will not tolerate dead tissue.

Sectional Bridge-Work.

ABSTRACT OF PAPER BY DR. E. P. BEADLES.

It is generally recognized that bridges should be as short as possible as a greater strength is obtained; in case of breakage repairs can be more easily made, and short bridges are more easily cemented on. Dr. Beadles described the following case, illustrative of these principles. The anchorages consisted of the superior centrals, left lateral, second bicuspid—right and left, and second molars, right and left. The first bridge made and cemented on, extended from left second molar to second bicuspid, each of which carried a shell crown. The bicuspid crown was made thin and without cusps.

For the second bridge, the left lateral root was fitted with pin and cap and a telescoping crown made to cover the previously crowned bicuspid, with a slot in the side to make room for the soldered attachment of the bridge already in place. The space from left lateral to second molar was thus filled with two bridges. The roots of the centrals were next prepared with pins and caps, with a shell crown without cusps for the second right bicuspid. This third bridge which carried the intervening right lateral, right

cuspid and first right bicuspid was then cemented to place. A telescoping cusp-crown was then made for the second bicuspid and a crown for the second molar, thus filling the upper arch with four bridges, one anchorage tooth on either side bearing the ends of two bridges, one telescoped over the other. This method has been employed by Dr. Beadles in several cases, with great satisfaction.

Plain Rubber Teeth in Bridge-Work.

BY WILLIAM H. COOKE.

Dr. Cooke suggests the use of plain rubber teeth in bridge-work, in place of facings or veneers, for molars and bicuspid. With a diamond disk a shoulder is cut below the pins and a thin backing of gold burnished to the back and shoulders, extending to the masticating surface and beyond the apex of the gum portion where it is burnished over and around the end forming a cup in which the tooth rests. Flow sufficient solder over the backing to secure the necessary strength for mastication.

Clinics.

Preceding the clinics Drs. L. M. Cowardin and H. Stuart MacLean, of Richmond, Va., displayed a valuable collection of microscopic slides prepared by Samuel P. Cowardin, F. R. U. S. A number of high power microscopes were arranged upon a large table so that those most interested in this study had an opportunity of examining numerous slides, representing both normal and pathologic conditions of tooth tissues and general histologic and pathologic tissues and bacteriologic preparations.

Dr. T. West, Natchez, Miss., demonstrated his improved methods in plate-work.

Dr. H. H. Johnson, of Macon, Ga., showed a new method of strengthening a decayed root, for crown attachment. Dr. Johnson exhibited among other anomalies and dental curios, two sets of teeth belonging to the same patient, who had actually *worn out* the porcelain teeth; one set being ground down to the base; the other to the level of the platinum pins which had cut grooves in the opposing teeth. Dr. Johnson also showed a cast of a jaw in which the second bicuspid had erupted posterior to the first permanent molar. Also casts of jaws of a man forty years of age in which nearly all of the deciduous teeth, and also the perma-

nent teeth were in position in the lower jaw, a number of deciduous teeth being present in the upper jaw also.

Dr. Merchant stated that Dr. Staples had presented the Museum of the Texas Dental Society with casts of almost a parallel case.

Dr. Crawford said that he had seen the casts in the latter case and had supposed that Dr. Johnson's were duplicates of the same case. This is not the case, however.

Dr. C. L. Alexander, Charlotte, N. C., demonstrated a new method of retention of rubber-plates, adaptable to any difficult cases. He also demonstrated his method of making "cast fillings."

Dr. George B. Clement, Macon, Miss., demonstrated his new alveolar computing forceps, designed for the immediate trimming of the alveolar ridge, removing all projecting points of socket walls and septa, placing the ridge at once in the rounded smooth condition to which nature brings it by the slow tedious process of absorption, facilitating the healing process of the soft tissues and putting the mouth in condition for the reception of artificial dentures in the course of a few weeks, instead of months. In this clinic, the remains of fourteen teeth in the upper jaw, were removed, and the alveolar ridge mostly trimmed in about four minutes, without the use of anesthetics. Dr. Clement's forceps has a long, flat beak, which is to be pressed firmly down between the alveolar wall and periosteum, the latter being carefully preserved for the part it plays in the healing process. In the extraction of roots, flat-beak serves as a universal elevator. Dr. Clement claims that the process of trimming is effected without additional shock to the patient if performed immediately; that it lessens subsequent pain, soreness and discomfort, and greatly shortens the time between extraction of teeth and insertion of substitutes.

In the discussion of this clinic, Dr. J. Rollo Knapp expressed the opinion that the patient had been subjected to undue suffering, and that the final result would not be found to justify the operation.

On invitation of the Chairman of Clinics—Dr. T. P. Hinman—a committee of three local dentists—Drs. Knapp, Bauer and Vignes—was appointed to watch the case and report upon the condition of the mouth at the expiration of a month from the date of operation.

Dr. J. Y. Crawford commended the operation as based upon the profoundest principles of oral surgery and as exemplifying the rule laid down in the preparation of a mouth for the reception of artificial teeth by "the grand old Atkinson"—the immediate surgical removal of all that Nature would otherwise remove by a tedious and painful process.

The jagged margins of the alveolar process, and the numerous septa, cause suffering—prolonged sometimes for weeks and months, as the scar-tissue of the healing soft tissues is drawn taut across the projecting sharp points of bone. It is a humane operation to present, by means of a surgical operation, to the torn and mangled gums, a smoothly trimmed, rounded surface, over which they heal rapidly by first intention.

Dr. C. R. Vignes, New Orleans, demonstrated the treatment of pulpless teeth with iodoform vapor, under pressure, using the Blair vaporizer.

Dr. T. C. West said that his patients objected so strenuously to the odor of iodoform that he had been led to experiment with other drugs in the vaporizer, and had for several years been obtaining uniformly successful results by the substitution of acetanilid for iodoform.

Dr. A. J. Foret, New Orleans, demonstrated the use of the electric helix for obtunding sensitive dentin.

Dr. T. P. Hinman, Atlanta, Ga., made a porcelain inlay, with the Jenkins' system, the case being the labial surface of a right superior central.

With a patient in the chair, Dr. W. J. Younger described the methods which he would employ in the correction of the irregularities presented, by the use of silk ligatures. He laid particular stress upon the point that it is only a popular fallacy that silk thread tightens with moisture. Pure silk does not contract under moisture. The thread must be stretched until it will yield no more, before tying the knots—a surgeon's knot, covered by a granny-knot. It is the contractility of the silk thread, after being stretched, that gives it its wonderful power.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

Contribution to the Pathological Anatomy of Sensitive Dentin.—The stumbling-block of modern dento pathological investigators is sensitive dentin. Every one is engaged to find some remedy to overcome this affection, but there is very little to be hoped for as long as we are not fully acquainted with a definite knowledge of the patho anatomy of sensitive dentin. The formation of the transparent zone in caries is a vital reaction (according to the author's opinion), it is a neoplasm of dentin produced by the dental fibrillæ and the odontoblasts. An external irritation, viz: in chronic caries or in erosion, may be transmitted to the odontoblasts and they will react typically by the formation of new dentin. Secondary dentin is the result of some vital process; the pulp protects itself towards caries. If the odontoblasts could produce enough dentin, the sensibility of the respective regions of the dentin would be lessened and not increased. Hypersensitiveness of dentin will manifest itself only in such places where the formation of secondary dentin cannot progress on an equal rapid path with the advancement of irritation. The partial cloudiness of dentin is the result of some vital action. Here occurs the direct opposite to the first phenomenon; it is a diminishing of dentin, viz: some form of resorption of the dentin by the dental fibrillæ. Softening of the dentin destroys the vitality of the dental fibres. The author does not believe that it ever will be possible to find nerve-fibres in the dentin proper, and therefore, we cannot expect any results from such remedies which are used for anesthetizing of nerves. Certain drugs have some value in this connection, viz: citrate of cocain dissolved in glycerin or the hydroxides of potassium and sodium, but their action will be limited to the superficial layer only.—*Dr. Walkoff, Ref. from Correspondenzblatt F. Z.*

Diseases of the Teeth and the Lymphatic Glands.—Carious teeth are quite often the open door-way for an infection of the entire organism. By infection we understand a disturbance of

the physiological equilibrium of the body by the immigration of micro-organisms. Staphylococci and streptococci are to be found mostly in such cases and the lymph-apparatus, and more so the lymphatic glands are first affected. It is, therefore, of importance to the dentist to show a certain interest towards the behaviour of these glands, especially to those of the submaxillary region. Until lately, very little is found in dental literature in regard to this lymph-system, and even the general anatomical works treat the matter sparingly, often contradicting themselves. The author in connection with Drs. Ollendorf and Starke made careful dissections and found next to the glands of the submaxillary regions three smaller ones in the triangle formed by the digastric muscle. By injecting fluid through the pulp-canals of the teeth, a direct communication between the teeth of the upper and lower jaw and the single glands could be established. Only the four lower incisors are in connection with the submental glands, all the others are connected with the sublingual glands. This fact confirms Waldeyer's statement that the tooth-pulp is free from lymph circulation. Von Bergmann's investigations show that the lymphatic glands seem to be a kind of a filter-station, preventing the immigration of toxins into the body. Furthermore, as the pulp is free from lymphatics, infectious products cannot pass through the pulp unless the pulp is decomposed, and therefore, offers an entrance gate-way through the apical foramen. It is a fundamental error to presume that caries may be the cause of tubercular manifestations in the regions of the neck. If the periosteum is diseased, an affection of the lymphatic glands is very likely to occur. It is easy to diagnose a swelling of the sublingual glands. The operator should stand back of the patient and with the tips of the fingers the submaxillary region should be slightly palpated. It is of importance in cases of periodontal inflammations to pay attention to these glands. If the tooth should be extracted, the alveolus needs antiseptic treatment and the glands should receive general medical attention.—*Dr. Pertsch, Odontol.-Blätter.*

Two Cases of Pericementitis.—I like to call your attention to two cases of pericementitis, which I treated unsuccessfully. In 1889 I treated the left lower second bicuspid. At the time the tooth had a large distal cavity. An antiseptic treatment of the

root-canal, followed by an amalgam-filling, restored the usefulness of the tooth for nine years without the slightest pain during all this time. All at once, without any direct cause, the tooth showed signs of periodontal inflammation. At first, they occurred rather spontaneously but in time the pain became so severe that I was forced to extract the tooth in spite of all the treatment which I gave it.

The second case concerned the left upper central of one of my patients. Both centrals bore large gold fillings which were inserted, according to the statement made by the patient, by an able New York dentist in 1865. In 1881 the patient came under my treatment. From then on till 1892 the fillings still does good service. An examination made in 1892 showed secondary caries near the cervical border of the fillings. I therefore removed them. The pulp of the right central was dead; I treated the canal and filled it with cement. The left central had its root filled with gold. After cleaning the canal as far as possible I filled it again with cement. Till 1895 both teeth done good service and kept perfectly quiet. In November, 1895, the left central became very severely inflamed. The tooth was again opened from the palatine surface, the root-filling removed and antiseptically treated. In January, 1896, the root was again filled and has given good service until now. The same year, 1898, the right central became inflamed. The root was opened and treated as above but the pus formation is still going on till to-day (November, 1898). I have to admit that my confidence in our present treatment of pericementitis is somewhat weakened. In spite of a thorough cleaning of the canals, sterilization, and solid filling, the pericementitis which occurred in after-years, should remind us to think of some means and ways to prevent such unpleasant affairs. —*Dr. Hesse, D. M. für Zahnkh.*

A well built man, twenty years old, was admitted to the clinic, showing the usual tetanic symptoms: pronounced trismus, contraction of the muscles of the hyoid-bone, etc. The patient received the usual treatment for tetanus for about a week but without any success. He finally was able to open his mouth partially and an examination of the teeth was made. This revealed the cusps of a wisdom-tooth which was just about ready to erupt from a deep socket in the ramus. The tooth pushed

almost horizontal against the second molar and was therefore unable to make its way upward. This second molar was extracted and the symptoms soon vanished.—*Cornilliac, Revue Odontologique.*

Dr. Herbst now prepares gold plates for dental purposes by uniting two thin plates by the addition of a thin layer of solder between the two. In making a band or a cap for a crown, he brings the free margins in proper position for wires, paints a little borax over the joints and holds in the flame of the Bunsen burner. The solder between the plates will unite the ends securely.—*Dr. Herbst, W. Z. Monatsschrift.*

An Abnormal Location of the Inferior Dental Canal.—Occasionally we hear of severe or even lethal hemorrhage after extraction of teeth. The cause is found either in hemophilia, leucamia or as a result of injuries of large blood vessels. Hollaender was the first one to call attention to the fact that the roots of the second or third molar would in certain instances reach very near or even into the mandibular canal. The author investigated this peculiar condition in a large number of lower maxillary bones and found in numerous cases the roots of the three molars and even the second bicuspid in direct contact with the wall of the canal. This, of course, would not directly cause a severe hemorrhage in extracting such a tooth but the roots are oftentimes hookshaped and may, therefore, cause a severe laceration of the blood-vessels. Amongst the various experiments the author found a very peculiar case. The left side of a mandible showed all the teeth in position except the first molar which had been extracted and the wisdom-tooth which had not yet erupted. Judging from its appearance the bone may have belonged to a man of about thirty-five years of age. The lingual wall of the bone was ground away. A retained wisdom-tooth was found. Directly in front of this tooth the inferior dental canal was found to be obliterated and it seemed as if the canal had made its way around the buccal surface of the tooth. Accordingly the buccal wall was ground down to the tooth but no canal could be found. He removed the wisdom-tooth and found to his astonishment the canal penetrating through the root of the tooth. The two roots formed one single cone, the canal being at almost right angle to the long axis of the tooth. If the tooth should have erupted, it

would surely have caused serious trouble. Besides periosteal manifestations, severe neuralgia would have been a constant factor and in extracting the tooth incontrollable hemorrhage might have followed with fatal results.—*Dr. R. Loos, Pest. unz. V. für Zahnhk.*

ALL SORTS

A Laboratory Hint.

In preparing a full upper or under denture for investment in the vulcanizing flask, and when the set is finally waxed up, take a piece of waxed floss silk and, commencing at the condyle, lay it closely on where the wax terminates at the top, or, if an under set, at the bottom of the rim. Carry the waxed thread entirely around the rim and bring the other end of the thread back over the other condyle.

The set can then be invested on the under side of the flask, and the plaster allowed to flow up so as to cover the silk, which is now around the set at the line where the division is to be made between the two parts of the mold.

When the plaster has stiffened just a trifle, place the thumb of the left hand in the center of the set and the fingers on the bottom of the flask and invert it. Then, taking the silk by one of the ends, and drawing it firmly but gently taut, pull it away from the set, keeping the silk touching the edge of the flask.

The silk can be drawn in this manner all around the set so as to cut off all surplus plaster very evenly, and so that the excess will drop into the waste-box.

This accomplishes the same work as the knife, and does it much better, doing away with the danger of marring the wax with the knife and also bringing the plaster more accurately to the top of the set.

The wax around the side of the set can be chalked, which will facilitate the detachment and dropping off of the surplus plaster.—R. BRITAIN, *Cosmos*.

How to Make a Crown for a Molar Which is to be Used as a Pier in Bridgework.

In making a crown for a molar, which is to be used as a pier or buttress, it will sometimes be found that the antagonizing tooth strikes so forcibly on it that we could not use a solid tip on such a tooth without

cutting away so much of the occlusal surface as to give unnecessary pain in doing this. In a case of this kind we first make the band to encircle the crown, then we place a piece of wax within the band on the occlusal surface. Then we direct the patient to bite hard into the wax. We then take an impression with plaster of Paris of this tooth, from which we make a die. On this die, we press up, by means of burnishers, a piece of lead about 28 guage thickness. We place this piece of lead exactly in position in the wax, which we had placed within the band on the pier tooth, and again direct the patient to *bite hard*. This drives the piece of lead *this thickness deeper into the wax*, and in this way compensates for the thickness of gold plate which we will swage over the band in order to form the cap or occlusal surface of the tooth.

When the wax has been treated thus, all overhanging superfluous pieces are carefully dressed away from the band and an impression taken with plaster. A die is made, *and an impression of the impression is taken with mouldine*. Into this mouldine lead is poured, which forms the counter die into which the cap is swaged.—T. F. CHUPEIN, *Office and Laboratory*.

The Rapid Mallets.

The only places suited for a rapid mallet are in cavities ready of access, where it is merely a matter of laying on the gold, and also for finishing the surfaces of fillings after the inaccessible parts of the cavity have been filled. It is hazardous to attempt to build gold around corners or to reach difficult positions with the rapid mallet. Such an effort usually results in bridging the gold over spaces, and fails in perfect protection of cavity walls in the inaccessible regions.

It is often an agreeable change for the patient to have the rapid mallet substituted for the hand or automatic mallet as the filling nears completion. Any diversion in the character of the blow seems to afford relief from the monotony of a long sitting, and to be more acceptable to most patients than the continued use of any one kind of blow throughout the entire filling. For this purpose the rapid mallet becomes very useful, and it also materially shortens the operation. Gold may be condensed on an accessible surface almost as rapidly as the pellets can be carried to the tooth and placed by the assistant. This mallet also leaves a surface even and dense, if its manipulation be well understood.

The proper method of using a rapid mallet is to sweep the plugger point across the surface of the filling from center to margin, as if the gold were being wiped into the cavity. The process is entirely different from that of the hand or automatic mallet, and this fact should be recognized by those who attempt to use it.

As before intimated, oval-faced pluggers with shallow serrations are indicated for the rapid mallet, whereby the gold may be wiped down on the filling instead of being caught by the side of the plugger and torn off laterally, as would be likely to result with a flat-faced plugger having a sharp angle between the serrated end and the shank. Another advantage of oval-faced pluggers relates to the safety of enamel margins. The rapid mallet carrying a plugger with sharp angles is exceedingly prone to shop up or pulverize the margins unless the greatest care is exercised, but the oval-faced pluggers will permit greater freedom of action without injury. This watchful care of the enamel margins is one of the necessary precautions in the use of any rapid mallet, and no operator should attempt to use such an appliance without due appreciation of its dangers in this respect.—C. N. JOHNSON, *Cosmos*.

Reduction of a Fracture of the Inferior Maxilla.

Mr. B., aged 21 years. This patient comes to us to-day having a double fracture of the inferior maxilla on the left side; accident happened seven weeks ago; the posterior fracture has united, but the anterior fracture, between the lateral incisor and cuspid teeth has not, making an ununited fracture. A few spiculæ of dead bone remain between the ends of the fragments, which have set up an inflammation, and at the present time pus is discharging through a fistulous opening at the lower border of the jaw. The patient being under the influence of an anesthetic, I shall perform the following operation:

Operation.—Introducing a large piece of gauze into the mouth, to prevent the blood from passing down the pharynx, I proceed to freshen the ends of the bone, also remove the dead spiculæ of bone, which has kept up the irritation, and prevented the parts from uniting. This operation is usually performed by making an external incision along the lower border of the jaw and dissecting the muscles and other tissue from the fractured ends, but in this case I perform the operation within the mouth, thus not leaving any scar; I then drill four holes, two in each fragment, through which I introduce silver wires, so adjusted as to form a figure eight (∞); the ends of the fragments or none were drawn together by the twisting of the wires, which held the parts firmly together; as an additional precaution, a third wire was placed in position; running parallel with the body of the bone.

Treatment.—Keep as clean as possible, using bichlorid of mercury 1 to 1500; wash parts thoroughly every day until parts are healed.—T. W. BROPHY, in *The Bur*.

A Case in Practice.

An interesting case presented itself to me recently. A young lady thirty years of age came to my office with considerable swelling in the region of the left superior maxilla. On examination I found the second upper bicuspid quite loose and exceedingly sore to touch. I could find no evidence of any deposit on the root. There was a small proximal anterior gold filling under which I had placed a goodly lining of cement, and had allowed cement to remain a couple of months on account of the close proximity to the pulp before the gold was inserted.

The upper first bicuspid and the first lower molar had been extracted years before, and because of the loss of these teeth the upper first molar did not occlude with any of the lower teeth.

I removed the small gold filling from the bicuspid only to find the tooth quite sensitive to the grinding, so I sealed the small cavity with gutta percha, gave directions for internal and external medication, and in the course of two days the patient returned. The pain had subsided and the swelling became more concentrated immediately over the molar. The bicuspid was still loose and somewhat tender to touch. No evidence of pus could be obtained with the exploring needle. I opened into the pulp chamber very carefully, causing the patient little or no inconvenience, and found a good live healthy pulp which I proceeded to destroy. I was unwilling to open into the molar, and upon consultation I decided to proceed expeditiously as possible with the treatment and filling of the bicuspid root.

In six days from the first appearance of the patient at my office the root was filled, the swelling meanwhile having almost entirely disappeared.

Unfortunately the patient was called out of the city two days after the filling of the root, but at that time all was well and at this writing, three weeks since, I have just received a letter stating there has been no trouble.—W. G., in *The Bur*.

Jacket Crown.

The crown is to be used as a dummy and is made either with a facing or a plain rubber tooth. Twenty-three karat gold can be used, gauge about 31. The gold is cut into a strip a little wider than the tooth to be jacketed and one end cut "on the bias." If a rubber tooth is used the pins are straightened by pinching the heads with pliers. A pin hole is now punched near the margin of the gold strip in the acute angle of the bias, and the tooth being held pins up, the gold is slipped over the right-hand pin. All being held firmly in the left hand, the gold is wrapped around the back of tooth, or rather the face of tooth, and while held

thus the gold is marked for the scallop which will expose the porcelain face, being careful not to make the scallop too deep, lest in the subsequent stretching the gold may be drawn beyond the end of the facing. Now cut this piece out with curved shears and file up smooth. Replace and press the gold against the other pin and punch a hole at the point marked by the pin point, and cut the strip again on the bias so the gold will overlap the other margin.

Replace and pinch the pins together, and holding the tooth with porcelain up, grasp the protruding gold firmly with a strong pair of pliers, and with force bend the gold back towards the pins, thus stretching the jacket tightly about the tooth. Cut off the surplus gold. Cut a piece of 20 k. solder long enough to cover the entire joint and bend the end at a right angle; hook this angle over the cut end of the jacket, the object being to insure the flowing of solder into the joint. Lay the tooth, porcelain down, in a bed of loose asbestos fibre, add borax, and with a broad flame melt the solder all at once and it will sink into the joint uniformly. The jacket can now be burnished close to the tooth and finished with a file. More solder can then be added if needed.

The method was not claimed to be original with Dr. Tileston, but was demonstrated because of the ease and quickness with which the dummy could be made, its artistic appearance, great strength and durability.—H. B. TILESTON, in *Dental Digest*.

Success with Difficult Operations.

We are sometimes called upon to perform operations which ordinarily would not be considered practicable. The following cases were operated upon with but little hope of success. It was necessary to give relief even at the risk of a loss of a tooth.

A day laborer about forty-five years of age came to my office with a left superior cuspid severely aching; after destroying and removing the pulp in the usual manner, the pain still continued with the tooth sensitive to touch. I found after treatment that the medicine did not reach the point of disease, and the only relief was by local treatment, and that only for short duration.

After thoroughly studying the case I found the root curved almost at a right angle at the apex. I could not force an opening through the root with the finest nerve instrument. The pericementum was very much inflamed. Failing to obtain relief by the usual root treatment, I concluded to try the following: By drilling a small hole at the angle or curve of the root with a fine cut bur, being careful not to cut or wound

the root membrane, the tooth was then treated, and in a few days filled successfully.

Another case similar to the above, was that of a liveryman, aged thirty-seven years. The tooth was a right superior cuspid; the root near the apex was curved and an opening could not be obtained; local treatment gave but little relief. A small opening was cut through the root, as in the above case; the tooth was then treated, and in a few days filled without the slightest discomfort.

In treating cases of this character care must be taken not to injure the root or wound the membrane; the filling must not pass through beyond the opening and press upon the soft tissue.—G. NORTH, in *Items*.

How to Use Mat Golds.

In using Selila, or any form of mat gold, in approximal cavities with deep cervical margins, place two or three large, soft gold cylinders in the bottom of the cavity, allowing them to project over the cervical border. Press them loosely in position with a broad surface plugger, but do not attempt to condense. Now introduce as large a piece of mat gold as the cavity will take, and condense thoroughly, using, first, large oval-faced hand-pluggers with a rocking motion, and follow with smaller points and the mallet. I use mat gold with much satisfaction, but I never finish a filling with it or allow it to project over the margin at any point. The most perfect margins can only be obtained by the use of folded cohesive foil or, what I prefer, rolled gold, Nos. 30 or 60. I use soft gold cylinders at the cervical border, because the condensation of mat gold over these gives a more perfect joint than I can get in any other way.—I. L. W., in *The Dentist*.

Suggestions for the Use of Iodoformagen Cement.

Iodoformagen cement ought to be kept in a place of moderate temperature. For mixing I use a heavy glass plate, which I heat to the temperature of blood, the thickness of the plate retaining the temperature better than a thin plate would do. The spatula likewise warmed. Thus I have overcome the quick setting tendency of the cement. The consistency of the mixture is rather thin, creamy-like.

I have heard complaints that the cement sticks to the instrument. Every cement will do so unless it is mixed to the consistency of putty. In arguing this question we must point out the office of a capping material. It must cover the exposed pulp without exercising any pressure; nevertheless, it should form a snugly fitting cover to the exposed part.

According to my experience the application of a putty-like mixture of cement will always involve a fatal pressure, which can easily be avoided only by mixing it to creamy consistency.

A very convenient vehicle for carrying the cement to the tooth is Dr. Teague's depressed cavity cap disk. A proper sized disk is selected, and grasping it with a suitable pair of pliers, I fill the concave side of the disk with the mixed cement. Then I place the disk on the mixing slab, metal side down, and turning to the patient I am always able to manipulate the cement before it becomes hard.

If the cement has hardened and you wish to remove the disk, you can do so without any detrimental effect to the cement. The thin metal cap parts readily, leaving the capping material undisturbed in its place.

Iodoformagen cement used in conformity with these little hints, will give astonishing results.—OTTO BICKEL, *Items*.

Refining Gold Scrap.

To those dentists who wish to refine their gold scrap themselves, the following plan is recommended: The scraps should be dissolved in a small quantity of nitro-muriatic acid—warming hastens the solution—the solution should then be diluted with about three times its volume of water, and nearly neutralized by adding a small quantity of sodium carbonate. The solution should remain slightly acid or the gold will be precipitated; in that case redissolve by adding a few drops of nitro-muriatic acid. Filter the solution, washing it through with water, then add slowly while stirring, a concentrated solution of ferric sulphate, acidulated with a little sulphuric acid. Set the solution aside for twenty-four hours, so that all the gold is precipitated, then decant the liquor through filter paper to catch any particles of floating gold, wash the precipitate out of the vessel into the filter paper, roll up the paper and fuse with plenty of flux.—*Off. and Lab.*

Amalgam and Zinc Phosphate for Filling.

If I am to insert a filling in the anterior teeth I try to get a preparation of as light a color as possible. I select alloy, add sufficient mercury to make it a little more plastic than I would were I to use amalgam alone. I wash it with alcohol and grind the mass in a mortar. For the quantity of filings that I have used in the amalgam I take from one-third to one-half of the whitest zinc oxide I can obtain, place upon the

glass tablet about the quantity of the liquid that would be needed for the amount of oxide, possibly a very little more, then grind the oxide powder with the amalgam, in a mortar, thoroughly. With a very strong spatula I now mix the phosphoric acid with the mass above described, and get it into place as speedily as possible. The material is very sticky, and considerable force should be used in packing it into the cavity. Under no circumstances should it be used unless all moisture can be excluded. I will say that I frequently see operations that I made nine years ago with this material that are as perfect as though made less than nine days ago.—DB. STRONG, in *International*.

Plain Teeth with Pink Rubber Gums.

Objection is sometimes urged to the liability which the red or black vulcanite, of which the plate is made, cropping through on the pink rubber gums and marring the effect. This would certainly be an objection if it could not be successfully combated. The cropping through of red or black rubber on the pink gum facing may *always* be avoided, if the case be first carefully packed with pink rubber, especially between the teeth, as they lie in the plaster investment of the flask, using a thin instrument to pack the pink rubber (which should be softened on a heated soapstone slab) in these spaces. After the case is thus packed—packing the pink rubber of the gum facing *first*—the red or black rubber is packed *afterwards*, gates for the escape of the surplus rubber having been cut *entirely on the back of the investment, no gates whatever being cut on the front*. The two parts of the flask are now put together and the bolts applied, and the flask immersed in water and permitted to boil at least five minutes. The flask is then lifted out of the boiling water and the *two front bolts screwed down first*. When these are down as far as they will go, the flask is boiled again and the back bolt screwed down. If a case of plain teeth with pink rubber gums be manipulated in this way the red or black rubber of the plate *will never crop through* to deface the gum facing.—T. F. CHUPLIN, *Office and Laboratory*.

Treatment of Pericementitis.

Doubtless every practitioner has had some experience with high-grade pericementitis, in which the tooth continues to throb and hammer with inflammation increasing in spite of the aconite and iodin applied to the gum, and in spite of the persistent application of drug after drug to the affected part until the mouth is blistered, the throat sore, taste tem-

porarily destroyed, the patient made generally and wofully miserable, and the dentist, in sheer desperation, has sent his patient home with the assurance that he has used all known remedies and done all in his power ; or, worse, has been guilty of malpractice in extracting the offending tooth.

In such cases good result may be obtained if in addition to the local treatment the following internal sedative is prescribed :

R Potassii bromidi, 3 ii.

Aquæ, f 3 ii. M.

Sig.—A teaspoonful every two hours.

—L. GREENBAUM, *International*.

BRIEFS.

A Hint Regarding Amalgam Fillings.—Insertion of amalgam fillings will be more satisfactory if small particles of alloy be burnished into the mass after absorption of excess mercury.—*L. G. Powell, Ind. Jour.*

The Proper Menstruum for Silver Nitrate.—Remember that distilled water is the proper menstruum for silver nitrate, and that peppermint water or any other solvent containing organic matter will decompose it.—*G. B. Squires, Cosmos.*

Pain After Extraction.—If a pellet of cotton be dipped in the tincture of perchlorid of iron, and on this two drops tincture aconite, and two drops chloroform, and the pellet thus charged introduced in the socket of the extracted tooth great, almost immediate, relief will be experienced.—*Office and Lab.*

Final Treatment of Root-Canals.—Our final treatment of root-canals at present is to flood them with campho-phenique; then heat a blunt-pointed smooth plugger, and attach the base of a gutta-percha cone point to it: dip the cone point first into campho-phenique and then into the powder of tribomophenol, and force it firmly into the pulp-canal.—*The Dentist,*

Wash Instruments Immediately After the Use of Silver Nitrate.—Mr. Coysh says it is quite true that nitrate of silver, *if pure*, will not tarnish steel instruments, but is very advisable to wash the material off immediately, or your instruments will be as bad as if left in contact with acid. As a matter of experience, we do not get pure nitrate of silver.—*The Dentist.*

Treatment of Abscess Swelling.—When I have a case of swelling resulting from the formation of abscess, I have no better treatment than the saline cathartic. I have never used a compound cathartic pill. It may be effective by producing a general depression, but the saline is the only remedy I know of for reducing a swelling after an abscess has opened.—*Dr. Greenbaum, International.*

Dentists Must Learn to Entorce a Proper Remuneration for Services Rendered.—This should be rated according to the value these are to the patient and the reputation of the operator. There is too much of the mechanical or shop-keeping idea extant, of remuneration of so much per tooth. The operator should be paid for his time, independent of all expense to which he may be subjected.—*From Ed. in International.*

To Apply the Dam to a Tooth where Cavity Extends Under the Gum.—Apply rubber-dam over a number of adjacent teeth so there shall be no cross-tension of rubber; and properly adjust ligatures. Have at hand an ordinary sized sewing needle and an automatic plugger. Force rubber-dam carefully out of cavity and hold in place with the needle. A few blows with plugger will fasten needle firmly in the tooth and thus hold back all obstruction.—*L. G. Powell, Ind. Dental Jour.*

A Practical Hint.—Dr. W. S. Depew advises all who use “Bryant’s Bridge Repair Set,” that much of the trouble about handling the small nuts, without dropping, when starting them on the pins may be avoided by touching the point of the screw driver with some sticky varnish, such as Sandarac or Howard’s, before putting the nut into its slot. After this the screw driver and nut stick together so that it may be manipulated without fear of losing the nut or of getting it started wrong.—*Off. and Lab.*

Protection for Engine Handpieces.—To prevent saliva and other fluids from getting into the handpiece of the dental engine while preparing teeth either for crowns or for fillings, but especially in the former case where the use of corundum stones necessitates frequent dipping into water, I invert one of the rubber cups on the shank of the instrument, the open side thus being towards the handpiece. This absolutely prevents moisture or debris from finding its way into the handpiece.—*J. Masters in Items.*

Sterilized Water—New Five Minute Process.—Bromin added to water will kill all the pathogenic germs in it in five minutes, the addition of ammonia will neutralize the bromin. Water 100, bromin 20; potassium bromin 20 for each liter of water. Neutralize with an equal amount of 9 per cent. ammonia. The water is then perfectly clear, the taste is scarcely altered; the amount of bromin remaining is so small

that it affects neither the taste nor health. The process is rapid, effective and cheap.—*Schaumburg. Deutsche Med. Woch.*

To Control Excessive Hemorrhage.—With pellets of cotton rolled up, about the size and shape of the tooth sockets, the end saturated with nutgalls and forced up into each root socket with pellets of cotton following until the cotton extends to outer margin of the gum, and then with pellets as large as walnuts, antagonizing the opposite teeth, head bandaged immediately, there may be no fear of a demise, as reported by Mr. Geo. Randorf, and I hope that this communication may relieve some dentist of an anxiety relative to his patients.—*H. H. Benjamin in Items.*

Cleansing the Teeth.—For cleansing the teeth I use a germicidal agent that is made of iodoform, salol dissolved in chloroform, and alcohol, to which is added a small quantity of oil of cinnamon or oil of cloves. I apply this with a camel's-hair brush or bibulous paper to the dry teeth, with or without rubber-dam, allow it to remain for a minute or two, and follow with a mixture of iodine and chloroform, equal parts, and allow that to dry. The effect is simply marvellous. I never knew what it was to have my patients have clean teeth until I used this preparation.—*Dr. Register, International.*

Treatment of Root Canals.—We regard the removal of infected dentine immediately about the pulp canal as a matter of importance, and this is quickly accomplished by the use of tri-concave reamer which has recently been described in this and other journals. After the use of this reamer the pulp canals are in the best possible condition for germicidal or antiseptic treatment. The preparations which have been our main reliance in this treatment for several years are camphophenique, hydro-naphthol, aristol, and, more recently, the *bismuth* salt of bromophenol.—*J. L. W., in the Dentist.*

Care in Prescribing.—The ordinary teaspoon holds more than one drachm, and in figuring doses we should reckon about six teaspoonfuls to the ounce. It is bad practice to write for an article which has to be given in drops. The drops from different bottles and droppers differ materially as do the drops from different liquids. Besides, the patient or attendant may make a mistake in the count and give an over or an under dose. Of course, teaspoons vary in size; but the discrepancy in the active drug is not so great as with drops, on account of its being in a diluted state.—*G. B. Squires in Cosmos.*

A Word about Capsicum Bags.—I do not want the proper kind to be confounded with the so-called capsicum plasters which are now so universally sold by druggists for the cure of toothache. The first are

made by filling with powdered capsicum a bag, one side of which is made of rubber to protect the cheek, the other of muslin to permit the fluids of the mouth to enter, dissolve, and act on the tissues covering the root or roots of the teeth against which these bags are placed. The second kind are not very strong, and are really worthless for the purpose of counter-irritation.—*L. Greenbaum, International.*

New Test for Cocain.—0.05 Gm. cocain hydrochlorid is dissolved in 20 C.c. of distilled water, mixed with 5 C.c. of a 3 per cent. solution of chromic acid, and to the mixture 5 C.c. of a 10 per cent. solution of hydrochloric acid is added. It is advisable to keep the temperature of the solution at 15° C. If the cocain hydrochlorid be pure, a clear solution becomes cloudy at once, or in a few minutes, according to the amount of impurity present.

It is advisable to make the test side by side with a specimen of known purity for comparison.—*G. L. Schaefer, Phar. Jour.*

Phagedenic Pericementitis.—It is, in the opinion of your essayist, to the class of non-bacterial inflammatory tissue reactions that phagedenic pericementitis in its earlier stages belongs, and that the toxic irritant is the group of alloxuric bodies which, as the result of faulty metabolism, find their way into the blood-stream and thence to the membranous investment of tooth, that are the active cause of degeneration of the tissue in question, and, should the irritative influence be of sufficient intensity as related to the vital resistance of the elements of the membrane, may and does cause its molecular necrosis with attendant inflammatory reaction.—*E. C. Kirk, International.*

To Polish Festoons on Dentures.—If a worn corundum or carborundum point in the hand-piece of the dental engine no larger than the bur used to produce festoons, be dipped in water, (or the plate dipped in water), and the festoons gone over, an almost polished surface will be left at these points. After this has been done with the ordinary corundum point, these places should be gone over with fine or polishing corundum points; this leaves these places with glistening polished surface, so difficult to reach with the larger brush wheels, so that it will only be necessary to use a little whiting on the fine soft polishing brushes to obtain a perfect finish.—*T. F. Chupein, Off. and Lab.*

A Combination of Metals that I have used with a good deal of interest and satisfaction, consists in adding gold to the amalgam alloy in sufficient amount to make the mass contain about twenty per cent. of gold.

I use the crystal gold strips number one, prepared by A. J. Watts; as it is very spongy, it readily takes up the mercury. I add the gold to

the alloy and mercury, then grind them as if no gold was being used, and a perfect amalgamation is the result.

The question at once arises—what is gained by this combination? The color is very greatly improved; I have not observed any shrinkage, expansion, or crumbling of the margins; also there is less staining of the walls of the cavity; so I consider much is gained by the addition of the gold.—*International*.

Practical Points.—The following suggestions are taken from an article by Dr. F. Rose, in the *Journal Brit. D. Asso.*

TO OBVIATE SUCTION; with composition: Pass a thread of rubber dam silk across centre of composition in tray before inserting in mouth. When composition is hard draw out silk and the impression drops, owing to the inlet of air.

With plaster: It is better to have a plug through centre of tray and plaster, which is withdrawn when plaster is set. Carmine mixed plaster for an impression is useful in defining the impression, and the plaster model cast into it.

BEFORE TAKING AN IMPRESSION IN COMPOSITION, first run cold tap on tray, and then warm surface of composition over spirit-lamp. This gives a better definition than if the composition were of the same consistency throughout.

TO TAKE AN IMPRESSION OF A MOUTH WHOSE INTERNAL CAPACITY IS OUT OF PROPORTION TO THE ORIFICE BETWEEN THE CHEEKS AND LIPS. In these cases insert tray on right side first and drag cheek back, and with the left hand over the head hold a visiting card in the angle of the mouth, so that the left side of tray will press against this instead of the cheek. It acts as a shield for the cheek, and greatly facilitates the ingress of the tray.

THIN BLADE CLASPS are sometimes required on a plate in a case where there is so little interspace between the teeth that it is difficult to cut the model with the saw exactly in the right place. In such a case use blades of silver, pushed between the teeth in the mouth. These come out in the composition or plaster, and when the model is cast into the impression the lines for the blades are exactly indicated.

WHEN ONE OR MORE LONG FANGS REMAIN IN THE GUMS, it is a good plan to cut holes in our impression tray to let these teeth through, and then mould a bit of soft composition over each when it emerges through the tray.

WHEN WE HAVE A VERY DOVE-TAILED MODEL TO MAKE, it is as well to make small composition blocks for the dove-tails, the same as in false core-casting in metals, and then take the impression with these *in situ*. They are left behind in the mouth, but are then taken from the mouth

and placed in position in the impression and the plaster cast into it. The fine lines of union can be scraped off the model with a pen-knife. In cases with loose teeth this is a most useful dodge, as the blocks help to steady the loose teeth.

CASES WHERE, FROM ONE CAUSE OR ANOTHER, THE PATIENT, WANTING A DENTURE, CANNOT BE SEEN WITHOUT TEETH, and cannot spare the time to stay at home during the making of a temporary set. In such cases I have very frequently adopted the following plan with very great satisfaction to my patient. Take a specimen model of the natural teeth as they stand, and match the color. Procure a set of "minerals" of exactly the size, shade and character. Then preferably extract the back teeth and stumps that have been condemned, and leave the gums to settle for a few weeks; but this is not essential, it is only advisable. Next take an impression of the mouth with the teeth in, and make trial plates for getting the bite to these models. When this is done with a fret saw cut off the teeth of the model close to the gum, having previously carefully trimmed away any drags in front so as to get the exact position of the labial surface of the natural teeth. Then with a sculptor cut out the plaster from the sockets of the teeth on the model, so making your plaster model like it would have been if you had taken the impression *after* extracting the teeth. Cut it freely away from the labial wall of the sockets. This insures a good fit of the artificial teeth to the gum. The front teeth are then extracted, preferably under an anesthetic, and the plate inserted at once, using force to push it into place and mold the alveolus to the necks of the artificials. With a little practice you can get most accurate fits.

SUCTION UPPERS. It is an aid, till custom makes the suction come naturally, to dry the palate with a fine cloth or bibulons paper, freely cover the palate of the denture with glycerin, and put in place, using some pressure.

A GOOD DODGE where a young patient has one or two natural teeth much elongated from Rigg's disease, is to extract them and use them to fix on to a plate—metal of course—instead of mineral teeth. Of course the teeth must be sound. It always pleases the patient. The way it is done is with a pin for a tube tooth cemented into a hole drilled through the base, but not to penetrate the enamel, and osteo is used for cementing.

TO CAST A MODEL IN SAND that has small interspaces where one or two teeth have come out, and the standing teeth are long, it is a good dodge to bend a bit of thin iron wire, like a hairpin, only shorter, and place it across the interspace sufficiently loosely to draw out in the sand when removing the plaster cast. It prevents the blocks of sand between the teeth from breaking out.

IN EXTRACTING SMALL ENDS OF STUMPS TOO DEEPLY IMPLANTED FOR THE FORCEPS OR ELEVATOR, use a fine excavator bent at right angles, pushed down the side of the socket as far as it will go, and then gently rotated with the thumb and finger with a slight pulling movement.

WHICH TO EXTRACT. When an upper wisdom which is fully erupted is biting on to the gum over an uprising lower (or *vice versa*) and extraction is required, extract the fully erupted tooth, *not* the one which is causing the pain. It is simpler, and effects the same end.

SOCIETIES.

Northern Ohio Dental Association

ELECTED the following officers: President, L. L. Barber; Vice-President, F. W. Knowlton; Corresponding Secretary, W. T. Jackman; Recording Secretary, W. A. Siddall; Treasurer, D. A. Allen.

National Dental Association.

RAILROAD arrangements for meeting of the National Dental Association have not yet been completed. A rate of one and a third fare, on the certificate plan, has been granted by some of the railroad associations; have not had replies from all of them, but expect to have within a week, and think all will grant this concession.

Wednesday, August 2nd, has been arranged as the day on which the special agent of the railroad associations will be at the meeting to qualify certificates. All attending should be sure to get certificate from ticket agent when purchasing ticket going, showing that full fare has been paid, otherwise they will not be entitled to the reduction in fare on return ticket. Tickets for reduced fare will be good going July 24 to 27 inclusive, and returning not later than August 9th.

Reports from Secretaries of Sections have not been received sufficiently definite to enable to issue at this time a complete literary program.

J. N. CROUSE,
Chr. Executive Committee.

National Dental Association.

THE Annual Meeting of the National Dental Association will be held in the ball-room of the International Hotel, at Niagara Falls, August 1, 2, 3 and 4, 1899.

A railroad rate of one and one-third fare on the certificate plan will be obtained. Also reduced rates on C. & B. and Northern Transportation S. S. Lines. It is suggested that members living at a considerable distance organize parties, and thereby be enabled to secure lower rates from railroad companies.

Following is a list of hotels:

Cataract House, - - - -	\$3.00 to \$4.00 per day.
International Hotel, - - -	3.00 to 4.00 "
Kaltenback Hotel, - - -	3.00 "
Imperial Hotel, - - - -	2.50 to 4.00 "
Columbia Hotel, - - - -	1.50 to 2.00 "
Temperance House, - - -	1.50 to 2.00 "
Niagara Falls House, - -	2.00 "
Niagara House, - - - -	2.00 "

Dr. M. O. Cooley, of Niagara Falls, N. Y., will engage rooms and answer any questions regarding local arrangements for the meeting. Definite meeting places for sections will be announced later.

It is the wish of the officers of the Association that members make special efforts to be present at section meetings, on account of the unusual number of valuable papers which must first be passed upon by the section to which they properly belong.

The following is the preliminary program:

"Porcelain Enamel Inlays," Dr. N. S. Jenkins, Dresden.

"Orthodontia," (Illustrated), Dr. Edward H. Angle, St. Louis.

"The Absolute Efficiency of the Controllers of the Market for Dental Cataphoresis," Dr. W. A. Price, Cleveland.

"Dental Electricity," Dr. L. E. Custer, Dayton.

"The Practical Side of It," Dr. S. S. Stowell, Pittsfield.

"A Bastard Profession," Dr. E. P. Beadles, Danville.

"Surgical Operations in Early Infancy for Palatal Defects," Dr. Truman W. Brophy, Chicago.

"Cements," Dr. E. K. Wedelstaedt, Minneapolis.

"The Reflexes of the Three Lower Molars," Dr. Jas. Truman, Philadelphia.

"Operative Dentistry," Dr. J. N. Crouse, Chicago.

"Gomphosis," Dr. B. H. Catching, Atlanta.

"Prognathism. Extraction and Delay versus Expansion and Early Attention," (Illustrated), Dr. R. Ottolengui, New York.

"Some Phases of the Cement Question," Dr. W. V. B. Ames, Chicago.

"A Study of Hare-Lip and Cleft Palate." (Illustrated), Dr. Thomas Fillebrown, Boston.

"Dies and Counter-Dies," Dr. Robert H. Nones, Philadelphia.

"Phyorrhœa Alveolaris," Dr. M. L. Rhein, New York.

"Constitutional Deterioration the Cause of Dental Caries," Dr. Harvey, Battle Creek.

"Oral Affections in Secondary Syphilis," Dr. W. C. Barrett, Buffalo.

"The Physiological Relation of the Adult Tooth-Pulp to the Economy," Dr. C. L. Hungerford, Kansas City.

"Etiology of Gnathic Abnormalities," Dr. A. H. Thompson, Topeka.

"The Dental Profession in Charity; an Experiment in Chicago," Dr. Carl Theodore Gramm, Chicago.

"Some New Points in the Anatomy of the Face and Jaws," Dr. M. H. Cryer, Philadelphia.

An Important Paper, by Dr. J. Leon Williams, of London.

SUBJECTS TO BE ANNOUNCED.

Dr. W. Geo. Beers, Montreal.

Dr. H. L. Ambler, Cleveland.

Dr. Joseph Head, Philadelphia.

Dr. John S. Marshall, Chicago.

Dr. A. H. Peck, Chicago.

Dr. R. H. Hofheinz, Rochester.

Dr. G. V. I. Brown, Milwaukee.

Dr. H. H. Johnson, Macon.

Dr. C. E. Kells, New Orleans.

Dr. L. M. Cowardin, Richmond.

Dr. L. L. Dunbar, San Francisco.

Dr. G. V. Black, Chicago.

Dr. W. H. Whistler, Cleveland.

Dr. A. W. Harlan, Chicago.

Dr. C. N. Johnson, Chicago.

Dr. H. J. Goslee, Chicago.

Dr. F. W. Low, Buffalo.

Dr. T. P. Hinman, Atlanta.

Dr. B. Holly Smith, Baltimore.

Dr. M. C. Smith, Lynn.

Dr. E. C. Kirk, Philadelphia.

Dr. W. E. Walker, Pass Christian.

A revised program, with reports from chairmen of sections, will be issued later. Prominent members of the profession from abroad have been invited to be present.

The names of the gentlemen who have promised to present papers is a sufficient guarantee of the high character of work which will be done at this meeting. The minor details will be carefully looked after, and all unnecessary and irrelevant matter eliminated, so that the business of the Association may be transacted in a prompt and expeditious manner. It is hoped that the various State societies will send full delegations, and that all members of the Association, and reputable dentists in this country and Canada who are not members, will show their interest in and loyalty to the National Association by attending this meeting.

H. J. BURKHART, President.

EMMA EAMES CHASE, Corresponding Secretary.

J. N. CROUSE, Chairman Ex. Committee.

National Association of Dental Examiners.

THE next Annual Session will be held at Niagara Falls, N.Y., at the International Hotel, commencing at 10 a. m., Friday, July 28th, and continuing Saturday 29th and Monday 31st, adjourning in time for the opening of the National Association on Tuesday. It is hoped that delegates from every State will be present. As this session is some days ahead of the National, please write and secure your rooms as members of National Association of Dental Examiners. The rates will be \$3.00, \$3.50 and \$4.00 per day, according to the location of the rooms.

CHARLES A. MEEKER, D.D.S., Secretary,
29 Fulton St., Newark, N. J.

American Medical Association—Section on Stomatology.

AT the recent meeting in Columbus, Dr. M. H. Fletcher, Cincinnati, was elected chairman of the section and Dr. E. S. Talbot, Chicago, Secretary. Next meeting at Atlantic City, N. J., June, 1900.

Annual Meeting of the National Association Dental Faculties.

THE annual meeting of the National Association Dental Faculties will be held at Niagara Falls, beginning Friday, July 28th, 1899, at 10 a. m., and continue the 28th, 29th and 31st.

Wisconsin State Dental Society.

THE twenty-ninth annual meeting of the Wisconsin State Dental Society, will be held in the Assembly Chamber, Capital Building, Madison, Wis., July 18, 19 and 20, 1899.

A cordial invitation is extended to all members of the profession to be present.

The State Board of Dental Examiners will meet at the same time and place for the purpose of examining candidates for license to practice.

W. H. MUELLER, Secretary,
21 West Main Street, Madison, Wis.

The Chicago Dental Society.

NEWLY elected officers are as follows :

President, Garrett Newkirk ; First Vice-President, G. W. Cook ; Second Vice-President, B. D. Wikoff ; Secretary, Elgin Ma Whinney ; Corresponding Secretary, C. S. Bigelow ; Treasurer, A. B. Clark ; Librarian, C. J. Merriman ; Member Board of Directors, Edmund Noyes ; Board of Censors, A. W. Harlan, Chairman, W. V.-B. Ames, C. N. Johnson.

OUR AFTERMATH.

EDITOR WILLIAMS.—We take pleasure in announcing to our readers that Dr. J. Leon Williams has accepted the editorship of *The Dentist*, published in London, and his able pen is already doing good work of an educational character.

THE OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

Periosteal Caries from Bacterial Origin.*

BY M. H. FLETCHER, D.D.S., M.D., M.S., CINCINNATI, O.

OF recent years my attention has been called to a number of cases of neuralgia, the exciting causes of which were obscure, as is frequently the case.

Amongst others was a case of supposed tiedouloureux accompanied by the apparent death of the periosteum over a larger portion of the lingual surface of the inferior maxilla of left side. While the exciting cause in this case may have been central, it apparently was peripheral; it yielded to local treatment, which fact strengthened belief in the peripheral origin. The finding of this lesion was the result of desperate effort, every logical treatment, both systemic and local having been resorted to, aside from nerve section, and all without relief.

REPORT OF THE CASE.

Mrs. X, age 55, suffered with paroxysmal pains resembling tiedouloureux, these continued with increasing tendency for three or four years, always including the first molar, this was the only tooth remaining back of the first bicuspid, and it was finally extracted, after having been devitalized and properly treated.

* Abstract of Paper read before the Section of Stomatology, Amer. Med. Association, Columbus, June, 1899.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

For a short period this gave some relief, but the paroxysms soon returned with increasing severity.

There was nothing abnormal in the macroscopic appearance of the bone, flesh, or mucous membrane, and no tenderness nor swelling, and no pus could be detected. Thinking possibly something abnormal might be discovered with a magnifying glass, one was used, and a tiny slit was found, not to exceed one-sixteenth of an inch in length, and situated on the summit of the alveolar ridge, at the former seat of the first molar.

My first impression was that I should find here a portion of the root of the tooth, but none could be discovered, the probe, however, after being forced between the lips of the opening, went into a large pocket on the lingual surface of the bone without farther resistance; careful probing showed this pocket to reach from the summit of the alveolar ridge to the inferior border of the jaw, and from the first bicuspid back to the angle, including the inferior dental foramen, the surface of the bone instead of being rough and necrotic, had the feel of being eburnated and without periosteum; of course the exact conditions of such cases can only be verified by post-mortem examination, and as yet, no opportunity has offered for such investigation.

It is held by others that the periosteum in this case is probably still present, and either divided, or entirely adherent to the supervening soft tissues; and I believe that all known laws of pathology would support the hypothesis that the periosteum is dead in this and all similar cases.

In studying the subject with the conditions in mind as recited in the above case, many old cases may be recalled, and many new ones have been presented which are interesting, as bearing on the pathology of the subject.

Two or three will be described as typical, and I believe will show sufficient reason for advancing the hypothesis of necrotic, or, carious periosteum and peridental membrane. The writer holds that the periosteum and peridental membrane are identical in everything excepting thickness.

CASE TWO.

Miss Y., age 35, after having suffered with neuralgia pains on both sides of the face for some months, presented herself for treatment, the pain was paroxysmal in character, distributed on

both sides of the face, being excited by foods, especially sweets, sour and salts, sometimes lasting for hours, there being very few meals passed without more or less pain, the paroxysms becoming more frequent and severe as time passed; the greater intensity



FIG. 1.

Section of cat's jaw, tissues in situ. Bloodvessels injected. *B.* Bone; *A. i. P.* Arteriole in Periosteum; *D.* Dentine; *B. i. P.* Bloodvessels in Pulp; *C. i. P.* Capillaries in surface of Pulp.

and more frequent location of pain was that of the lower molars of the left side.

On examination little or no calcareous deposit was found excepting on the backs of the lower centrals, but the pain never seemed to locate itself in this place.

About the molars and bicuspid, more especially around the molars on the left side, there was very apparent difficulty in the form of necrosed bone; the septa especially between all the molars, were more or less dead, some more than half way to the apices from the necks of the teeth, about the latter mentioned teeth in some places a smooth broach could be pushed clear to the apices of the roots, without pain or bleeding, showing the periosteum to be absent in much of the socket, but on cutting the septa away a sensitive and bleeding condition was reached about half way from the neck to the apex; the lingual and labial portions of the bone did not present so extended a lesion, but death of the periosteum, seemed to progress more rapidly and covered a much greater extent of surface than the dead bone.

In none of these localities, where there was little or no tartar, was there much apparent inflammation in the soft tissues, and no tenderness in the bone and flesh, until live tissue was reached below the necrosis. Where the calcareous deposit was greatest (on the backs of the lower centrals), there was some redness and possibly some pus with the bleeding, but no yellow or watery pus as in cases of typical pyorrhea.

CASE THREE.

Mr. Z., age 50, indicated constant pain, varying in intensity, sometimes in angle of the jaw and ear, but often in the lower first molar on the left side, or in vicinity, (the only molar remaining on that side below), half of the crown of this tooth had been worn away, and a protection of gold had been built on, and a large cavity in the anterior approximal surface had also been filled with gold. This gold work was going to pieces and had to be replaced, it was found that decay had proceeded under the approximal filling so that the pulp had to be capped, after this the pain increased in intensity and frequency of paroxysms. The next step was to remove the pulp, and obliterate the pulp cavity and root canals. This gave only slight improvement, so search was made for bone and periosteal trouble; it was discovered that a probe could be passed underneath the soft tissues on top of the ridge, for fully half an inch behind the first molar, the same condition of bone surface being present here that was found in the case one, (Mrs. X.); farther search also showed the septum to be largely dead between the molar and bicuspid.

Numerous cases could be reported to fill in all the varieties of this trouble, between the two extremes both in extent of lesion and pain, and this not only from my own records, but from those of some of my confreres notably, Drs. Heise, Callahan, and



FIG. 2.

Section of cat's jaw. Tissues in situ. Bloodvessels injected. *B. i. P.*, Bloodvessels in Pulp; *D.*, Dentine; *P. C.*, Pericementum; *P.*, Periosteum; *B. i. P.*, Bloodvessels in Periosteum; *B.*, Bone.

LeFevre, who have become interested in this particular lesion as distinct from pyorrhea-alveolaris and other lesions of bone.

The principles of treatment have been the same in all this class of cases, viz: removal of dead bone, if such could be discovered, and the sterilization of the pockets with escharotics, the

remedies usually used have been 5% alcohol as a menstruum for tincture of iodine, the strength of the latter used according to locality and symptoms from almost full strength to a 5% solution, to this was added two or three per cent. of oil of cinnamon.

In all cases recovery has been slow, varying from a few weeks to a year in duration.

In going back over these cases as to the extent of lesion, we have first: Cases in which the septa between the teeth become denuded of periosteum, then follows death of the septum; the former lesion at times invading the alveolar process on the lingual or buccal surface of the bone, although the soft tissues, aside from the septa of gum, still remain in shape and show little signs of inflammation.

Now as the trouble creeps down on the outside or inside of the jaw, (as in the case one, fully described) where the bone is much thicker and the collateral sensation much more extensive, the surface of the bone feels to the touch of an instrument as though it was eburnated and not dead, and if the sense of touch can be relied upon, the periosteum is absent as far as the surface of the bone is involved, it may be adherent to the supervening soft tissues, but the writer is of the opinion that it has been destroyed.

If progressive lesion of the periosteum on the outer or inner surfaces of the alveolar process is accompanied with confinement of pus, as it often is, we then have what is recognized as gingival abscess, and if the lesion about the roots and peridental membrane is accompanied with a perceptible flow of pus, it would be termed pyorrhea-alveolaris, but both of these conditions are to be distinguished from the one under discussion, nevertheless, this lesion may result in a collection of pus, and if this occur, a name is given it according to its locality, such as felon (onychia) empyema of the maxillary sinus, etc. Another phase of this lesion in the writer's opinion is, that this peridental caries, or mycotic destruction, *precedes the so-called uric-acid or serumal deposits about the roots of teeth, which deposits are secondary to a lesion, and not primary to it.*

There would seem to be no impossibility in the position that the periosteum may be destroyed, and the bone remain alive as in case one, since the collateral circulation could certainly supply the necessities of life for an indefinite period, to a bone so large as

the maxilla, then too, the progress of the disease is so slow that the surrounding tissues have ample time to adjust themselves to the new conditions, and we all know that nature is every ready to adapt herself to change, when compelled to in order to preserve the life of the organism.

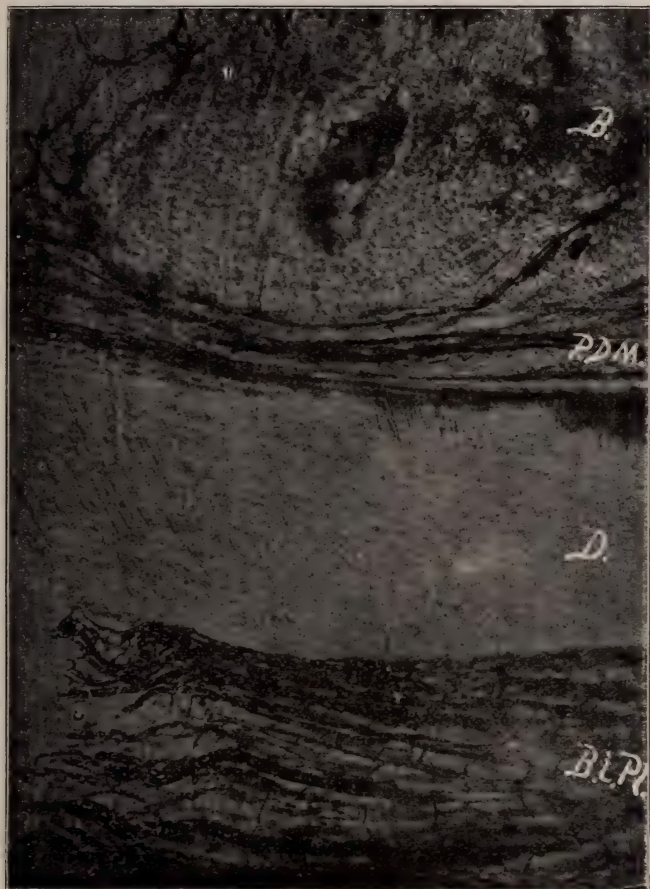


FIG. 3.

Section of cat's jaw. Tissues in situ. Bloodvessels injected. *B.* Bone; *P. D. M.* Peridental membrane; *D.* Dentine; *B. i. P.* Bloodvessels in Pulp, showing network of capillaries on the surface.

As to the periosteum being lifted off the bone, and remaining adherent to the supervening soft tissues, this can only be decided by post mortem examination.

I believe it will be admitted that all lesions of the periosteum

are attended with pain of a neuralgic character. In cases of confined pus within, or upon the surface of the bone, the pain is often almost beyond endurance.

In osteomyelitis, previous to the death of the parts, Senn says, "Pain may be absent at the seat of the necrosis, and referred to some other part or locality," this is true in the cases observed for the sensation was largely referred to some other place or locality, rather than the seat of the lesion, many times the patient not being able to locate it.

ETIOLOGY.

As to etiology, Senn further remarks, under necrosis, "The same bacterium which produces inflammation frequently, if present in sufficient quantities also causes cell necrosis" and he quotes his authority for such belief. The above statement and the supporting authority in company with the knowledge of the methods and destructive attacks of bacteria on dentine, could almost convince one, that once a suitable culture of bacteria or cocci had been started in the hornylike fibres of periosteum, *that they could produce continuous destruction of the membrane, much as they do that of dentine*, and this opinion is held for the following reason.

The study of the periosteum in my own laboratory shows it to be a very compact membrane of connective tissue fibres, and histologically much more the nature of the hard tissues than of the soft, hence the application of the word caries; in one of the layers it is found carrying arterioles in great numbers, *but having very few, if any capillaries any where in its substance*, and no blood-vessels at all in one layer although the supervening soft tissues are plentifully supplied with them. (See accompanying photos.)

If this is true then it seems rational to hold that this membrane during life can, and does, form a good and sufficient pabulum for the growth and development of bacteria, and this to its own destruction; the neighboring capillaries not being in a position to combat the inroads of the enemy much better than they would in caries of dentine. In capillaries lie the power of resistance to inroads of an enemy, as well as that of recuperation. It being known that migration of leucocytes, and diapedesis takes place almost exclusively in the capillaries; protection and repair

being amongst their most important offices, hence in tissues where they are absent or few, bacteria might be expected to thrive, and the writer is of the opinion that they do, and that the lesion in question is resultant upon the conspicuous absence of capillaries



FIG. 4.

Section of a cat's jaw. Tissues in situ. Bloodvessels injected. Flat surface of periosteum, showing arterioles, but few capillaries.

Arterioles are 1-60th of an inch in diameter; capillaries, 1-3000th.

in the periosteum, and they seem especially few in the periodontal membrane as the accompanying photomicrographs show, which fact may explain many of the phases of the diseases of this membrane and the alveolar process.

The exceedingly slow recovery of these cases under germi-

cidal and stimulating treatment, would also tend to support the hypothesis of the death of the periosteum by bacteria, and if the death is caused in this way, then the process might be called Caries of periosteum or Periosteal caries.

This hypothesis, however, can not even attain to the dignity of a theory, until some one of ample time and opportunity, takes up the subject and carries it through clinical and laboratory tests sufficient to establish it beyond question. The writer is convinced, however, that one would be highly justified in undertaking such a series of tests, and if such a theory could be established, many cases of so-called rheumatism, obscure neuralgia and headaches, could be traced to a progressive lesion or death of the periosteum in the bones involved.

In what seems to be complete recovery from amputation, or compound fracture, pain is often continuous and severe, and not easily accounted for, and in chronic diseases of the accessory air cavities and the mastoid cells, neuralgic pain is a prominent symptom, and at certain stages is of a character much as has been described in cases here reported, and the writer believes may come from the lesion described and should be investigated with that idea in view.

Regarding periosteal caries from bacterial origin in cases of amputation or fracture, and where thoroughly aseptic methods have been employed, one might be skeptical, but the infection may be carried through the blood from many distant sources, and if there were no other source, the gums, teeth and alveolar process are in many people the most perfect of incubators and are abundantly supplied with pathogenic microbes, especially those of pus, so that from this source if from no other, pus microbes and possibly other pathogenic germs could be taken up by the blood, and by locating at the point of least resistance, (*locus minoris resistentiæ*) result in the lesion under discussion, it being known that under different environment the same microbe may produce different results.

Roswell Park, under "Source of Infection," says:

"The oral cavity and pharynx are never free from bacteria. Miller has studied over one hundred species that he has found under various circumstances in the human mouth. Some of these are pathogenic, others are apparently absolutely innocent. Many of the forms which grow in saliva will not grow in ordinary

media. Miller has also shown that all forms of dental caries are but expressions of bacterial invasion, even of those apparently most solid structures, the teeth; and of late we have been taught more fully that such invasion may extend far beyond the confines of the teeth alone, and may spread to various, even distinct parts, and produce possibly fatal mischief. Abscesses in the brain and extensive septic infections have been clearly traced to invasion along the line of the dental troubles. One of the most virulent of all the common inhabitants of the mouth is the pneumococcus of Frankel, which, getting into the general circulation through the tonsils or other possible ports of entry about the mouth, causes serious septic and inflammatory disturbances in widely distant regions. Aside from dental caries, a widely opened port of entry is often afforded by those ulcerations around the margins of the gums, which are produced by accumulation of tartar. Disease in the antrum of Highmore, for instance, and many other local destructions are frequently caused in this way."

Now, is it not rational to believe that in lesions of the periosteum, whether traumatic or otherwise, and regardless of what bone of the body it may be upon, that we could have the progressive destruction of that membrane as above described?

The writer believes we can, for we certainly have in a very large per cent. of people the constant source of infection, and in every person the conditions in the minute anatomy to permit of what might be termed periosteal caries from bacterial origin.

[In the discussion of this paper, the term caries was largely objected to, and that of Ulceration and Necrobiosis suggested; ulceration is not appropriate (in the writer's opinion) for it implies death of tissues, in which the cells are composed of liquid protoplasm, a condition which does not obtain in the cells of the periosteum; the same is true of Necrobiosis or Coagulation necrosis, which processes attack the cells with protoplasm, and not the connective tissue between the cells, the periosteum being composed of connective tissue could not come under any of these heads.

Klebs found "That karyolysis is due to the action of chemical products of bacilli," hence Mycotic necrosis, or Karyolysis of periosteum seems next appropriate to caries.

Miller in treating of dental caries, says, "Dentine may be defined as a dense glue-giving basis substance, etc. The relations of Sharpie's fibres to the progress of decay in the cementum, is very significant, etc. They (the Sharpie's fibres) thereby facilitate the invasion of bacteria, etc." Now Sharpie's fibres when decalcified are composed of connective tissue substances and when in situ are often continuous with the fibres of the periosteum, being like it in composition.

Now, all of the connective tissue substances of the body are glue-giving, and the substance of the periosteum is composed entirely of these fibres, hence caries, which is always mycotic, seems as appropriate for the bacterial destruction of periosteum, as to the other glue-giving tissue of the body. Mycotic periosteal caries, might possibly be better than the title used, but caries signifies mycosis, hence does not need qualification.]

Epithelial Structures in the Peridental Membrane.*

BY FREDERICK B. NOYES, D.D.S., CHICAGO, ILL.

FOR four or five years I have been interested in the histological study of the peridental membrane, and during that time

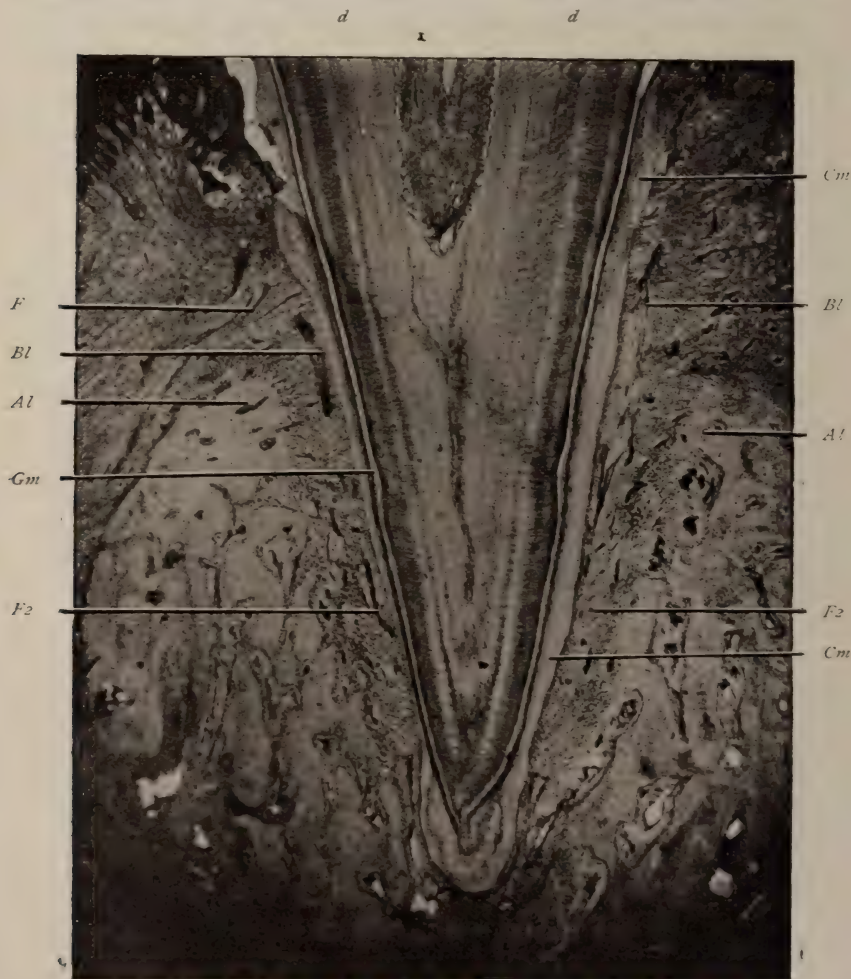


FIG. 1.

Lengthwise section of tooth, alveolus, and alveolar wall, showing fiber of the peridental membrane. *F* and *F2*, fibers of membrane; *Al*, *Al*, alveolar process; *Cm*, *Cm*, cementum; *d* *d*, dentin; *Bl*, *Bl*, blood vessels.

* Abstract of paper read before the Section of Stomatology, American Medical Association, Columbus, June, 1899.

have devoted what time I could to the special study of certain structures found in that membrane, and called by Dr. Black, who first described them, the glands of the peridental membrane.

The work which I have tried to do, is really not in shape to report, as it has not been worked out to the point where positive statements can be made in regard to the nature of these structures.



FIG. 2.

Fibers of the peridental membrane at crest of the alveolar process. *D*, dentin; *Cm*, *Cm*, cementum. *F*, fibers of the peridental membrane stretching across from the cementum to the alveolar wall; *Bl*, *Bl*, blood-vessels.

I have decided to make this simply a report of my work, and a statement of the problem as it stands. The histological

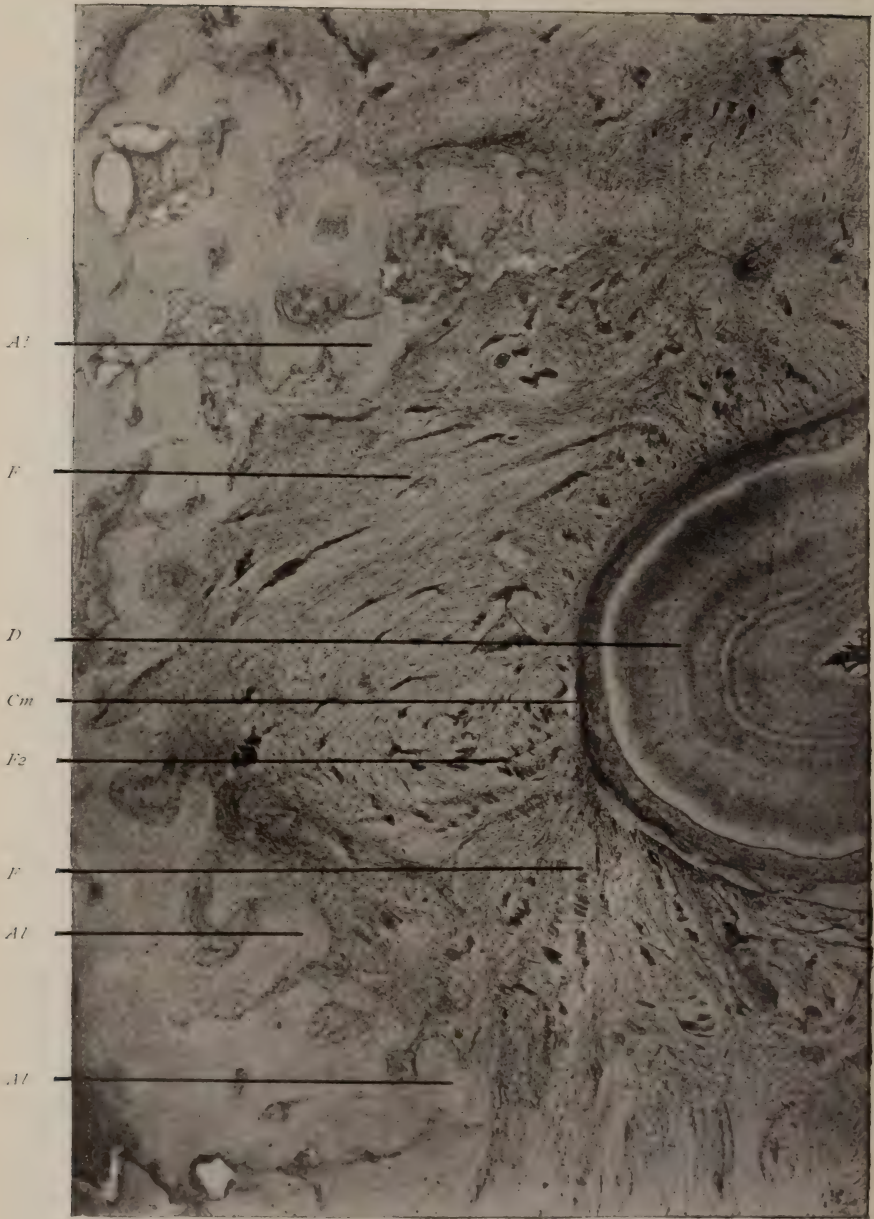


FIG. 3.

Figures 3, 3 are the two halves of a large photo-micrograph from a cross-section of the root, alveolus, and alveolar process of an incisor, showing the fibers of the periodontal membrane. *D, D*, dentin of root of tooth; *Cm, Cm*, cementum; *A1, A1*, alveolar process; *F, F*,

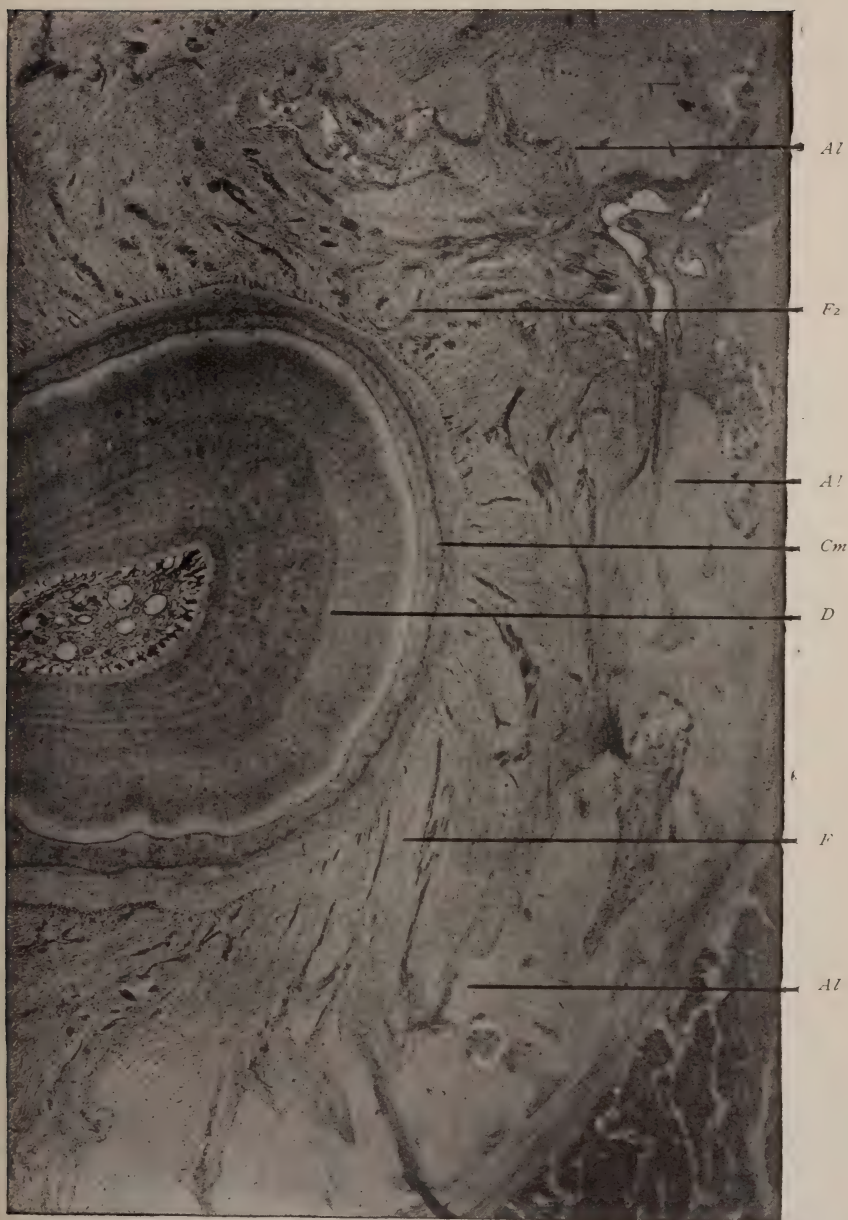


FIG. 3.

fibers of periodontal membrane passing from the cementum to the alveolar wall; *F2, F2*, bundles of fibers cut across. Many small blood-vessels cut across appear.

study of this tissue is beset with the greatest technical difficulties. One man has said to me that he had never seen a specimen of tooth that would be considered technically acceptable in the study of the liver, for instance.

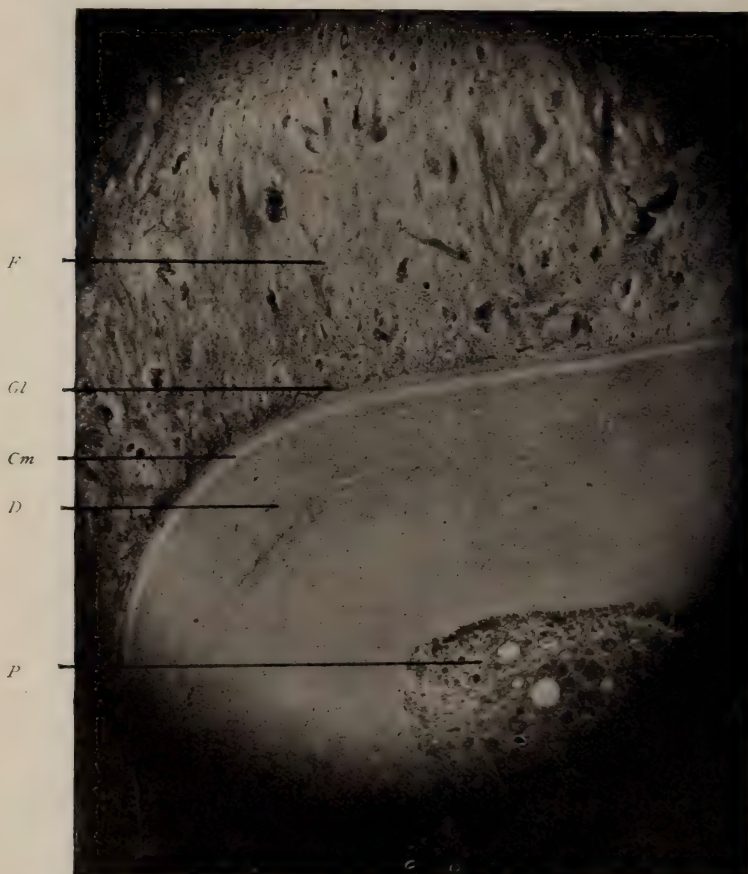


FIG. 5.

Cross-section of root of incisor and portion of membrane, showing glands of peridental membrane with a low power of the microscope. *P*, pulp of tooth; *D*, dentin; *Cm*, cementum; *F*, fibers of peridental membrane showing as irregularly broken dark lines close to the cementum.

It is almost impossible to get sections of the peridental membrane as thin as would be desirable for high power work. Though they are harder to study, many things can be learned from thick sections. Some things better than from thin ones

especially by comparison with lower powers, and the use of the binocular. The difficulty of showing in photographic illustrations the things that are learned in this way is very great, however.

The diseases of the peridental membrane have attracted a great deal of attention, and provoked an immense amount of



FIG 6.

Section cut tangentially to the root of a sheep's incisor. $1\frac{1}{2}$ in obj. *D*, dentine; *Cm*, cementum; *E*, cords of epithelial cells; *F*, fibrous tissue of peridental membrane.

writing and discussion. It is impossible that anything satisfactory can be worked out in regard to these conditions, which are of such great interest to the dentist, until the problems are attacked in a more scientific and rational manner. Until then we are fighting we know not what, we know not how.

The peridental membrane (Figs. 1 and 2 longitudinal sections,

Fig. 3 transverse section) may be defined as the tissue which fills the space between the root of the tooth and the bony wall of its alveolus, being attached to the cementum on one side and the bone on the other. It surrounds and is attached to the root

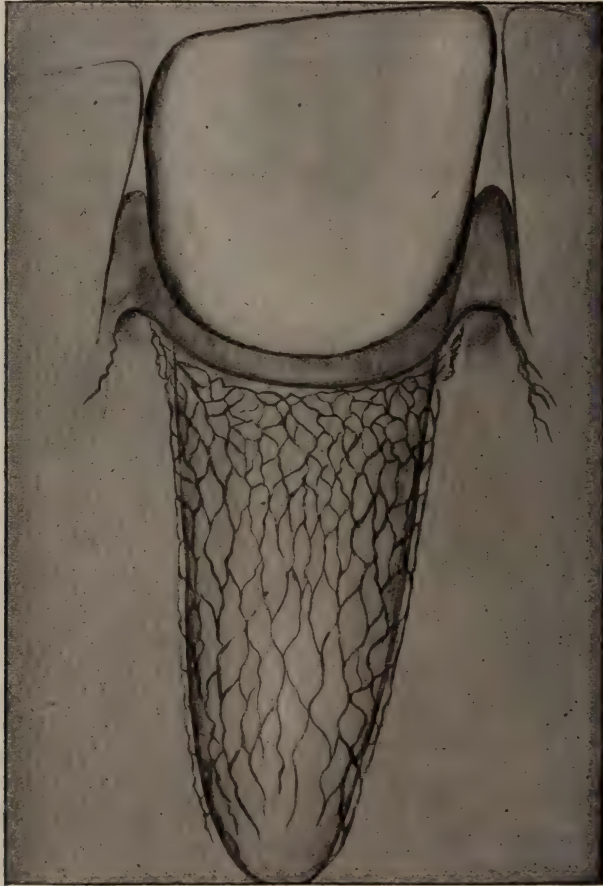


FIG. 7.

Diagrammatic illustration of the position and distribution of the glands about the root of an incisor.

from the border of the alveolus to the gingival line, and supports the epithelium of the gingivus. It has been called by a number of names, of which I prefer pericementum, or peridental membrane, the two being used synonymously. It belongs to the class of fibrous membranes, being composed chiefly

of white, fibrous, connective tissue. It is not in any sense a double membrane, and, while it has qualities in common with the periosteum, with which it blends at the rim of the alveolus, it differs markedly from the periosteum in any position.

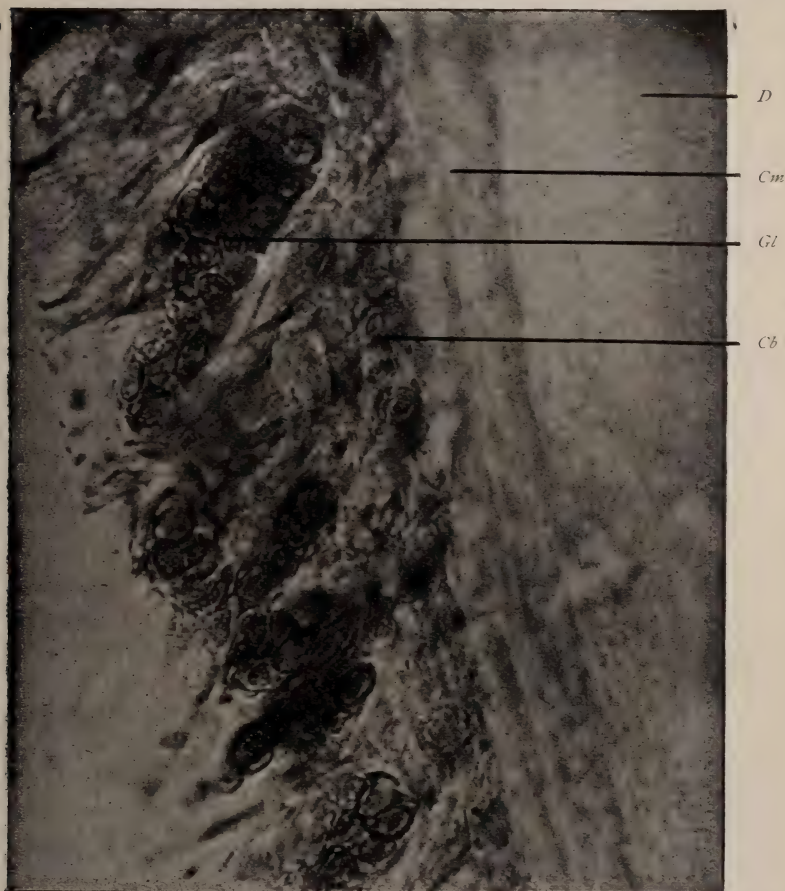


FIG. 8.

Glands showing shapes assumed from crowding between the fibers. *D*, dentin; *Cm*, cementum; *Cb*, cementoblasts; *Gl*, gland cells crowded between the fibers of the periodental membrane. The nuclei of these cells also appear.

In transverse sections of the membrane, which have been well stained with haematoxylin and eosin, even with as low a power as a thirty-five m. m. lens, small deep stained bodies can be seen lying close to the cementum, and winding between the fibres as they spring from it. With a one-half or three-fourths

in. (Fig. 5) objective and a binocular instrument, the winding of these cords of deep stained cells among the fibres is beautifully shown. In such observation these bodies suggest very strongly such structures as the sweat glands. As many as 200 bits of

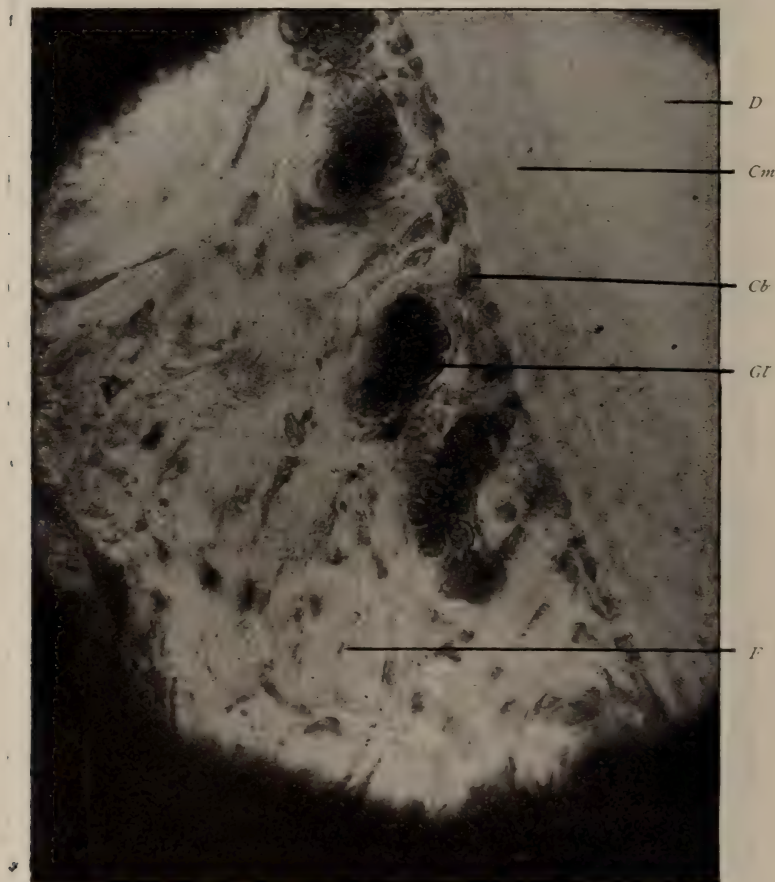


FIG. 9.

Glands lying among the large white fibers of the peridental membrane, showing the nuclei of their cells. *D*, dentin; *Cm*, cementum; *Gl*, gland-cells with nuclei; *F*, white fibers. A number of connective tissue-cells also appear.

these cords have been counted in a transverse section of the gingival portion of the membrane around an incisor of a young lamb.

In studying the arrangements of these cords they are found to form a net work about the root of the tooth, extending from

near the attachment of the epithelium at the gingival line almost to the apex. In the gingival portion they form a close meshed net which grows more open as they pass apically. In sections cut tangentially to the root, Fig. 6, this branching and net formation

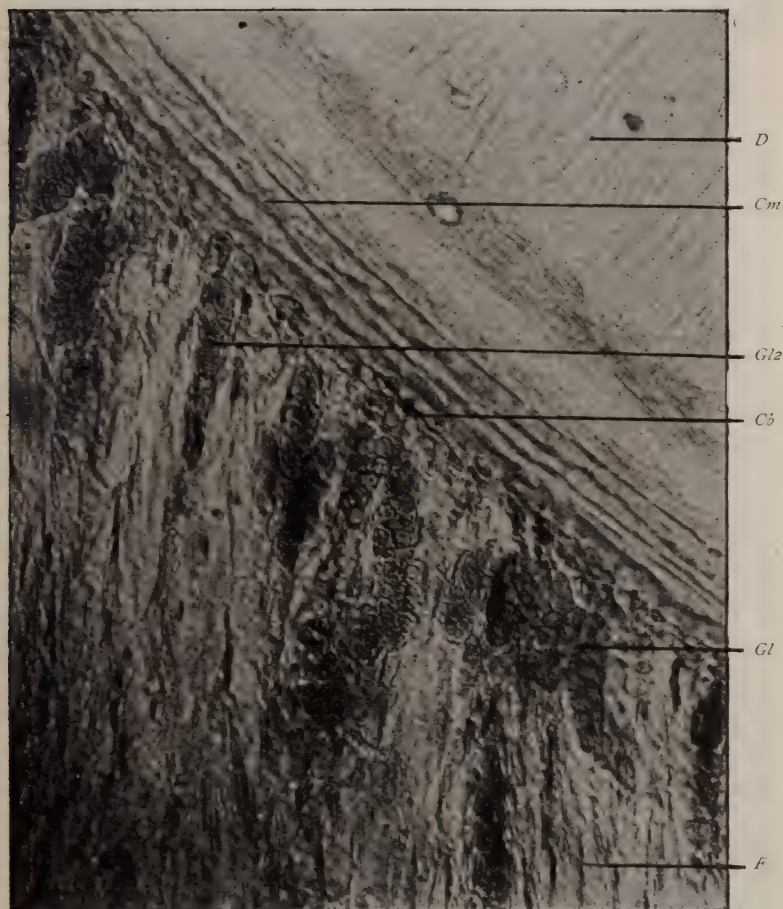


FIG. 13.

Showing extreme crowding of glands between the large white fibers of peridental membrane. *D*, dentin; *Cm*, cementum; *Cb*, cementoblasts; *Gl*, loop of glands; *Gl2*, extreme crowding of gland cells between the fibers; *F*, large white fibers particularly well shown.

is shown, but the entire arrangement cannot be shown in photograph. This diagram, Fig. 7, made by Dr. Black some time ago, shows the plan as it is made out from the study of many sections.

When Dr. Black first described these structures, thirteen or

fourteen years ago, in his "Studies of the Periosteum and Peridental Membrane," he considered them to be of lymphatic char-

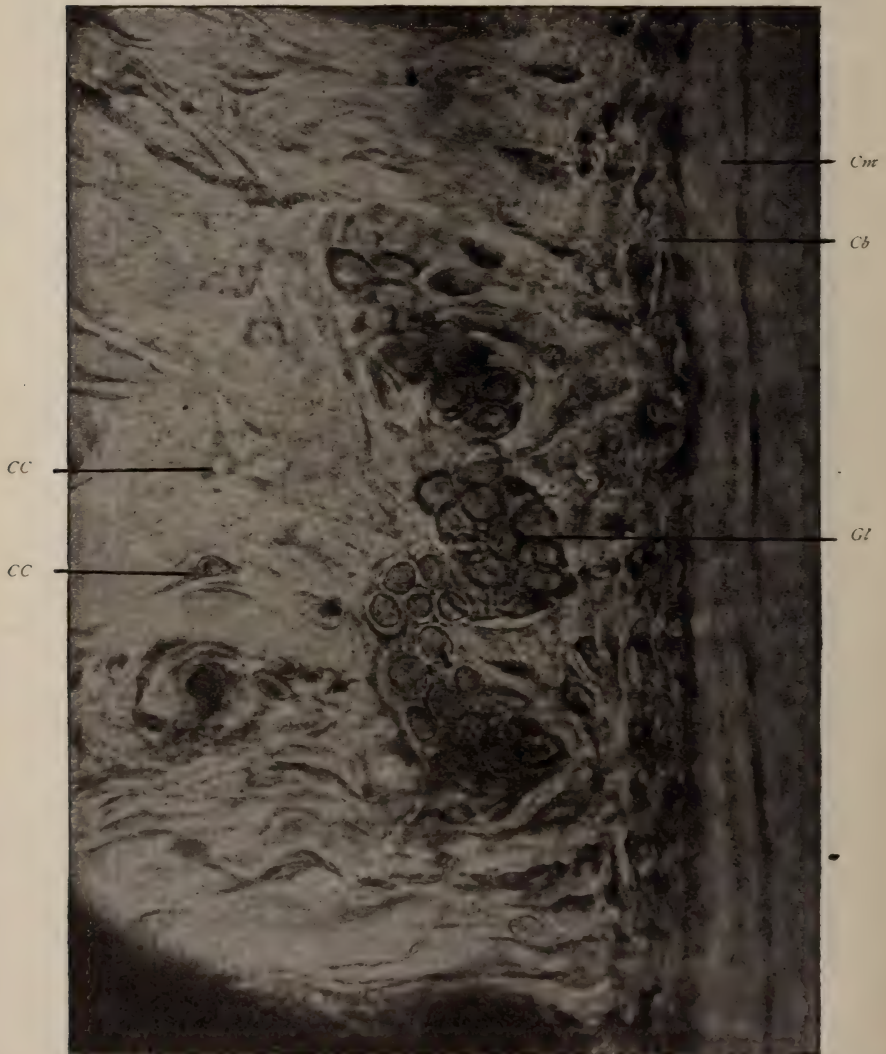


FIG. 16

Glands of the peridental membrane. *Cnr*, cementum; *Cb*, cementoblasts lying between the fibers of the peridental membrane close against the cementum; *Gl*, glands showing cells and their nuclei; *CC*, *CC*, connective-tissue cells. 12th-inch lens.

acter, and there are things about them that support this idea yet. but from a close study of the character of the cells they appear

to be of epithelial order, they show various forms, sometimes appearing ovoid, but usually polyhedral, or cuboidal. The nucleus is always large and conspicuous and often shows nucleoli, Figs. 8, 9.

The cells are not arranged in true tubules in all places, Fig. 13, though what appears to be a lumen, with a circle of

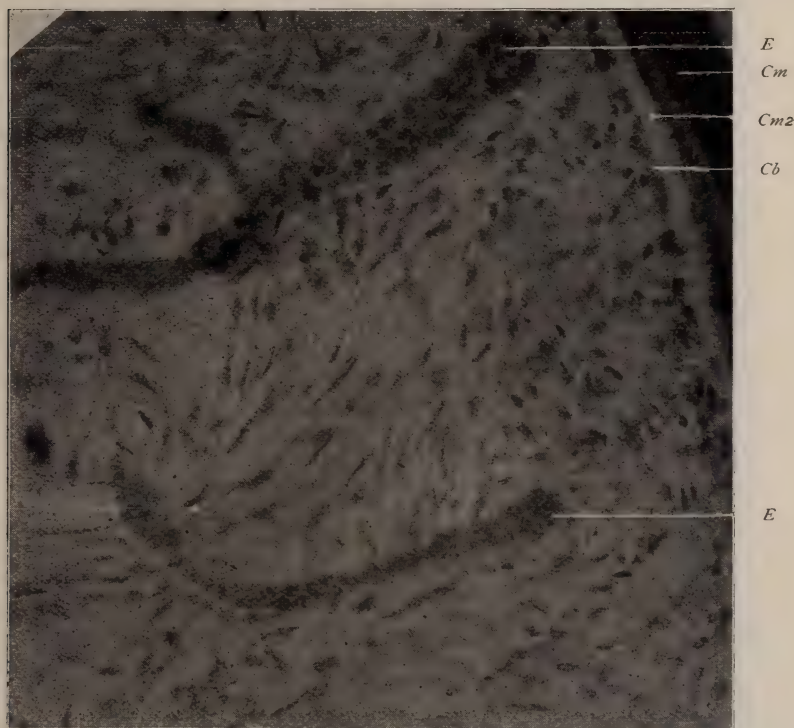


FIG. 17.

Epithelial cords. 1-6th obj. Occ. prog. No. 2, long bellows. *E*, epithelial cords; *Cm*, cementum; *Cm2*, new formed layer of cementum; *Cb*, cementoblasts.

cells about it, may be found in a good many positions. The structures are better described as cords of cells than as true, distinct tubules.

The cords of cells lie very close to the cementum, Fig. 16, between the fibers as they spring from it, swinging out from the root and back again in loops. In many places the end next to the cementum is club shaped, Figs. 17, 18, and come very close to the root between the cementoblasts.

A delicate basement membrane surrounds these cords, Fig. 17, and in a few places a circular arrangement of fibers may be seen about the large ones, Fig. 20.

I have searched for something in the form of a duct for these structures, or some connection between the epithelium lining the gingival space, and the cords. Some appearances which suggest a duct are uniformly found, but it has been impossible to follow

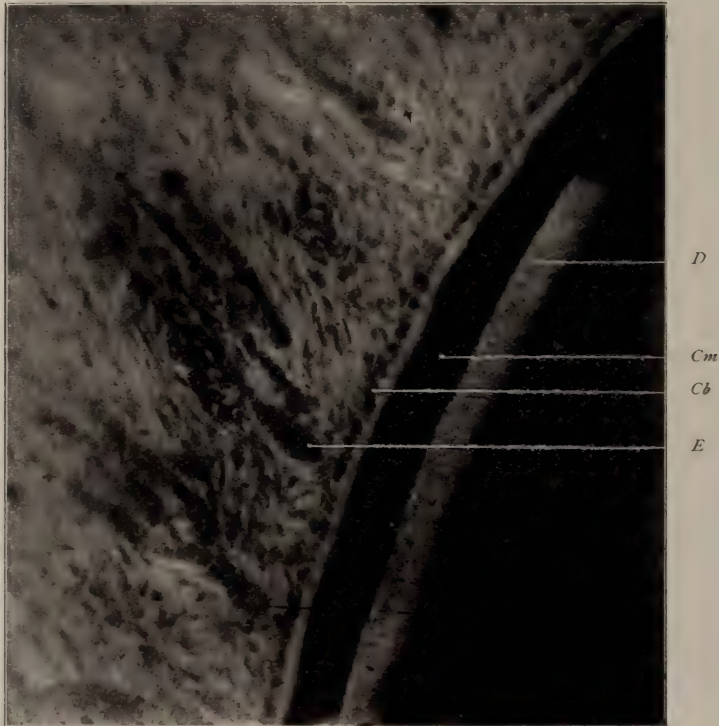


FIG. 18.

Epithelial cords showing club-shaped enlargements close to the cementum. 16th obj. Occ. proj. No. 2. *D*, dentin; *Cm*, cementum; *Cb*, cementoblasts; *E*, cords of epithelial cells.

them because of the failure in obtaining complete series of sections.

In the gingival portion of the membrane in tranverse sections, I have found a number of very perfect tubules in sections, of which Fig. 20 is the best illustration I have been able to get, but that is not as good a representation of the object as I could wish. With the microscope it shows a perfect circle of cuboidal

cells with large nuclei. In the lumen are several loose cells. There is a distinct basement membrane, and a few circular fibres. Just on one side of this is a small duct made up of four cells. When these tubules have been observed, they show a tendency to swing out from the surface of the root. The epithelium of the gingivus presents long slender projections, often of compli-

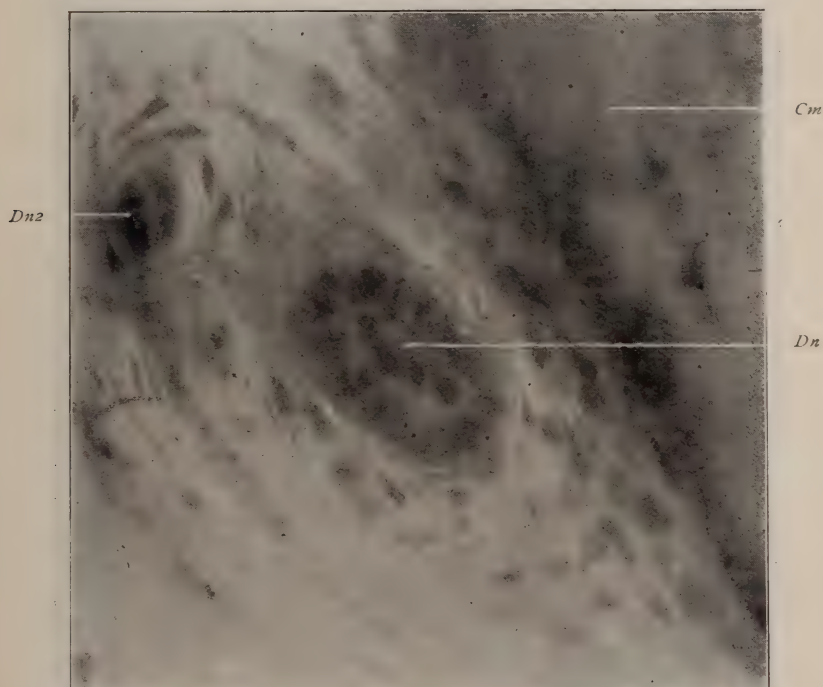


FIG. 20.

Section through a duct. 1-12th in obj. Occ proj No. 2. *Cm*, cementum; *Dn*, large duct, showing ring of cuboidal cell, with large oval nuclei and loose cells in the lumen of the tube; *Dn2*, small duct with but four cells, showing arrangement of fiber around it.

cated form. The connective tissue between these contains small round cells. This collection of round cells is especially conspicuous on the proximal sides, and constitutes what has been called the gingival gland.

The ducts have been followed among these epithelial legs, where they have been lost. But even in this position their cell structure is very different from that of epithelial legs, so that I would say that they do not connect with them. As far as I have been able to follow them they maintain their characteristics.

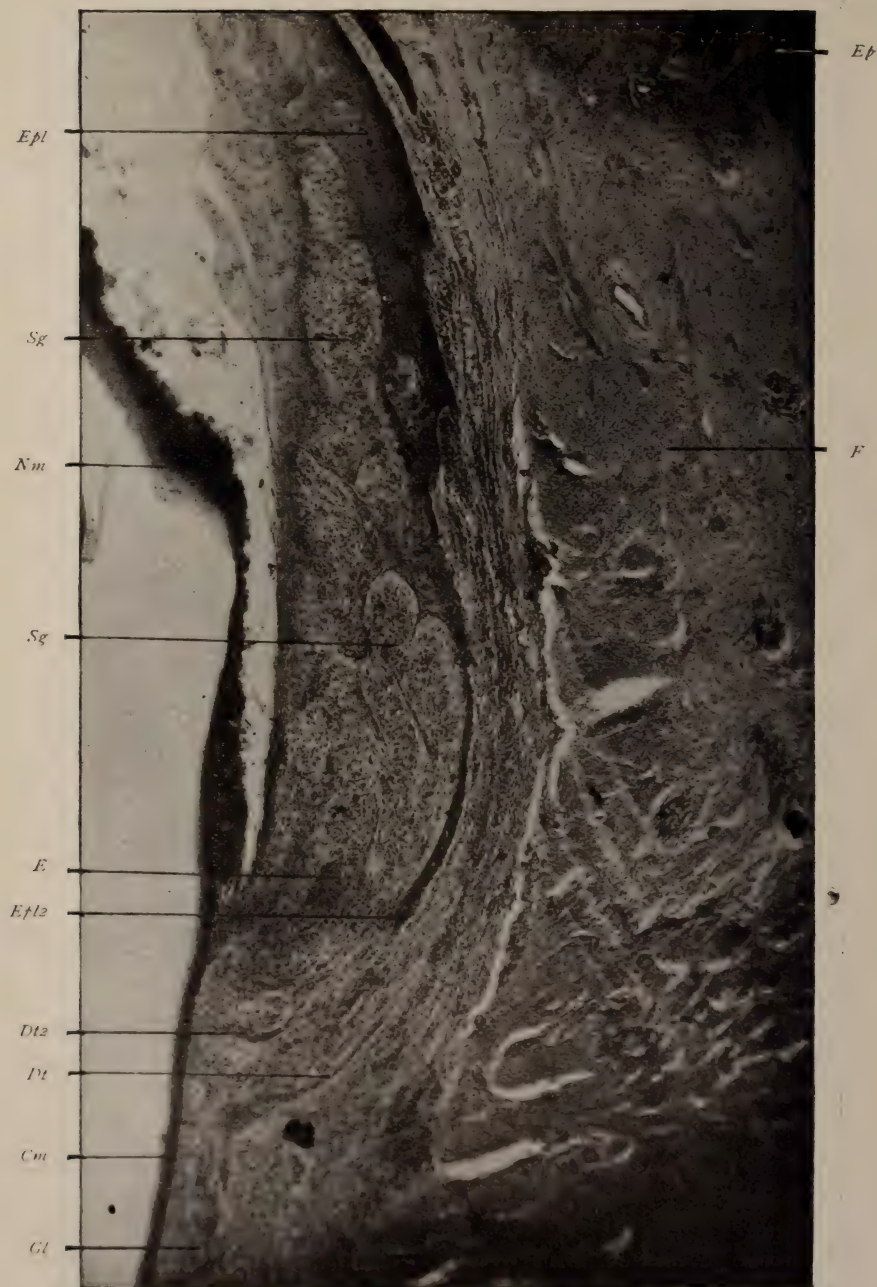


FIG. 23.

Gland of Serres, or the gingival gland. *Sg*, *Sg.* gland; *Cm*, thin cementum parted from the dentin; *Nm*, Nasmyth's membrane parted from enamel by the acid used in decalcifying; *Epl*, epithelial leg from superficial epithelium penetrating to *Epl2*, and separating gland from neighboring tissues, except at its base; *E*, epithelial cells, probably from the end of an epithelial leg; *Ep*, epithelium of outer portion of free margin of gum; *Gl*, glands of peridental membrane; *Dt*, duct leading from glands toward the gingivus; *Dt2*, small loop of a second duct.

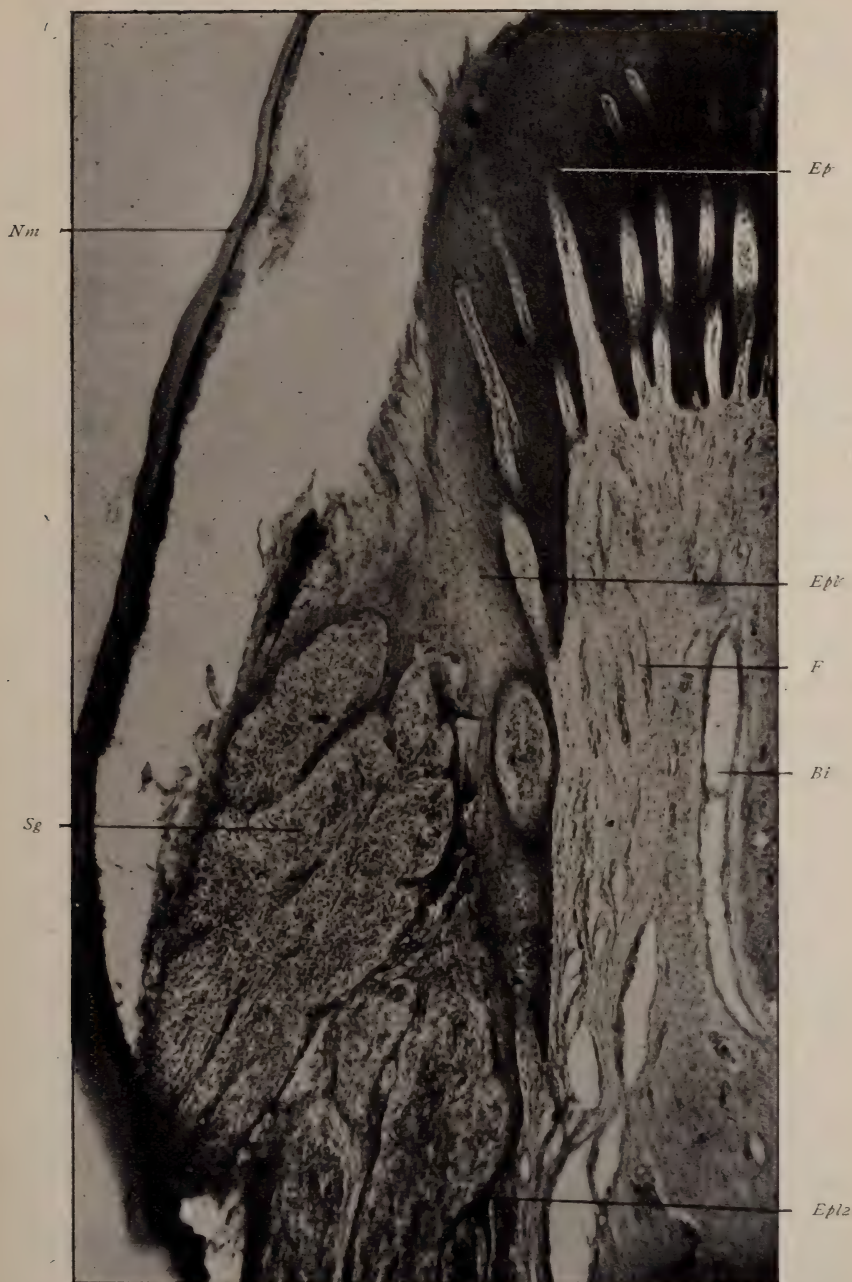


FIG. 24.

A second illustration of the gland of Serres, or the gingival gland. *Nm*, Nasmyth's membrane parted from the enamel in decalcifying; *Sg*, gland of Serres; *Ep*, epithellum of gingivus; *F*, fibrous tissue of gingivus; *Bl*, blood-vessels; *Epl*, epithelial leg from gingivus passing down to *Epl2*, and dividing gland from the neighboring tissues. Several small cords of epithelium are seen which may or may not be ducts from the glands of the peridental membrane.

The structure referred to by Dr. Black in the February *Cosmos* as the gingival gland, Figs. 23 and 24, and which as he states, is not a gland at all, is very characteristic of the gingivus, at least in the sheep, in which I have seen it chiefly. At first I was inclined to regard it as pathological, but it is so nearly universal in large or small form on the proximal portion of the gingivus, and has been so universally observed by Dr. Black, that it seems to be the normal condition.

The presence of these epithelial structures in the membrane is beyond question. Their nature, origin, and function, cannot be stated. I have shown photographs and sections of them to very many histologists and pathologists—engaged in general morphological work, as well as in medical work—and almost without exception, after looking them over, they say, "On casual inspection I should say that they are probably tubular glands."

I have observed them in sections of the membrane from man, dogs, cats, sheep, pigs, about the temporary and permanent teeth in the young and the old membrane. Like all cellular elements of the membrane, they grow less numerous with age, but they have been seen in the membrane from a man 70 years old.

The size, number, persistence, and conspicuousness of these structures make it seem extremely improbable that they are simply embryonal remains from the epithelial cord or external or internal tunics of the enamel organ, as suggested by the work of Von Brom, quoted by Charles Tomes (*Dental Anatomy*, page 107) and as was suggested to me by Dr. Huber, of Ann Arbor.

It seems to me that these structures must be present for a purpose, what that may be I cannot suggest, and I know nothing that throws any light on the question.

In order to work out the problem to meet the requirements of the Histologist four things must be done. First, the origin of the structure must be traced, so as to determine from what tissue they are derived.

Second, their relation to the blood supply must be determined.

Third, their morphology must be determined by making a complete series of sections, both longitudinal and transverse, to determine whether they have ducts or not, or other connection with the gingival epithelium, and the complete reconstruction of them from serial sections. The last task is perhaps impossible, but it could be done for small area so as to satisfy the demand.

Fourth, their condition in diseased conditions of the membrane must be carefully studied. Until such a program is followed out we can but speculate as to what the origin and function may be, and speculation of this kind *does not* often aid in the advancement of scientific knowledge.

Infectious Ulcerative Stomatitis.*

BY DR. JOHN S. MARSHALL, CHICAGO, ILL.

STOMATITIS is an inflammation of the mucous membrane of the mouth. All inflammatory conditions which involve the gums, the inner surfaces of the cheeks, the lips and the tongue are usually included under the general term stomatitis.

The affections which are thus included are with few exceptions confined to the period of infancy and childhood. Adults seldom suffer from these affections, except as manifestations of some other morbid condition.

The forms of inflammation of the mouth which are most common are *stomatitis simplex*, *stomatitis catarrhalis*, *stomatitis aphthosa*, *stomatitis parasitica*, and *stomatitis ulcerosa*.

A clinical study of the inflammatory affections of the mucous membrane of the mouth will reveal in certain features a close resemblance to the inflammatory affections as they appear in the skin, while in other points they will present features which are common to the inflammatory conditions of the mucous membrane in general.

Stomatitis Simplex is the mildest form of stomatitis, and is generally expressed in a more or less intense redness of the surface of the mucous membrane of the cheeks, the lips and the gums, in the form of rose-red elevated patches, and is due to a localized hyperemia of the parts.

It is usually found in infants and young children, and it is generally associated with some form of gastric or intestinal derangement. It rarely persists for more than a few days, and as a rule disappears with the subsidence of the gastric or intestinal disturbance. It is rarely seen in the adult. Occasionally it may

* Abstract of paper read before the Section of Stomatology, Amer. Med. Association, Columbus, June, 1899.

persist and gradually pass into a severer type of the disease known as stomatitis catarrhalis.

Stomatitis Catarrhalis, or follicular stomatitis, is an affection which is often a symptomatic expression of some more grave constitutional malady, such as inflammatory conditions of the alimentary and respiratory tracts, etc., though it may be induced by the local irritation of erupting teeth. It is common among children living in unsanitary districts, but rarely seen in adults. The disease is characterized by a diffuse inflammation, spreading upon the hard palate as streaks and patches. The papillæ of the tongue are affected, many of them appearing as prominent tubercles. The mucous glands become swollen and prominent, and can be readily felt by passing the finger over the surface of the membrane. Later they appear as "grayish or grayish red elevations of the surface, surrounded by a reddened areola."—(Ziegler.) Tiny crypts sometimes develop, which are caused by the retention of the secretions. Swelling of the tongue, lips, cheeks and gums often occurs, accompanied by fetor of the breath, heat and dryness of the mouth, followed by an excessive salivary secretion. In the severer cases the gums become soft and spongy, and bleed upon the slightest provocation. Fissures form at the angles of the mouth and upon the lips, with exudation and the formation of crusts. The constitutional symptoms are fever, diarrhea, thirst, loss of appetite and sleeplessness.

Stomatitis Aphthosa, or canker sore mouth, is by some authorities thought to be a peculiar form of stomatitis catarrhalis, for the reason that the aphthous patches occur upon the oral mucous membrane during a catarrhal condition. The disease is most common in sickly children during the periods of dentition, and occasionally later in life in those who are debilitated from illness or debauchery. It often occurs in women during menstruation, in pregnancy and during the puerperal periods. Occasionally it is associated with pneumonia, bronchitis, diphtheria, exanthematous diseases, ague, whooping-cough and tonsillitis.

The disease appears in the form of a small white or yellowish white patches upon the mucous membrane of the edges of the tongue and at the gingivo-buccal fold of the lips and the cheeks. They are slightly elevated above the surrounding membrane, and are exceedingly sensitive. The patches are surrounded by a more or less inflamed zone, and having a tendency to spread and coalesce forming larger patches.

The constitutional symptoms rarely exceed a slight elevation of temperature, loss of appetite, thirst and irritability.

Stomatitis Parasitica or *Thrush*, is a parasitic or mycotic affection, generally found in the mouths of infants and little children. The fungus which produces the disease is known as the "thrush fungus" or *oidium albicans*, which grows upon and between the layers of the epithelium, but develops most rapidly upon the squamous type of epithelium.

It is most common among ill fed and bottle-fed children, and is due to unwholesome milk and improperly cleansed nursing bottles. The disease is infectious, and in foundling and maternity hospitals it spreads rapidly from child to child, if great care is not exercised in sterilizing the food and the feeding apparatus. The growth of the organism is favored by an abnormal acidity of the oral secretions, a debilitated condition of the system and bad hygienic and sanitary surroundings.

The disease appears as small, white, elevated patches upon the inside of the lips, cheeks, sides of the tongue and just within the corners of the mouth. The mouth is dry and feverish, and the salivary secretion is scanty. After two or three days the patches assume a curdy or soft appearance. This curdy surface, the "thrush film," is easily peeled off, and leaves a denuded surface, which bleeds easily. It is soon covered again, however, by a new growth of the parasitic organism. The denuded surface is exceedingly sensitive, and renders feeding very painful, so that it is with great difficulty that little children can take food.

The extension of the disease to the pharynx, œsophagus, tonsils, hard palate and air passages, is not an uncommon course for it to pursue. The constitutional symptoms are elevation of temperature, disorders of the stomach and intestines, with vomiting and diarrhea. The excreta from the bowels are often greenish in color, mixed with curdy masses of milk, and are often exceedingly acid, causing excoriation of the anus, buttock, perineum, etc. The disease is sometimes seen in adults who have suffered from prolonged and wasting diseases like typhoid fever, tuberculosis, etc. In little children the disease sometimes terminates fatally from exhaustion and inanition.

Stomatitis Ulcerosa. This is a much more serious condition than any of the forms of stomatitis which have been mentioned, and is more often seen by the dental surgeon and the stomatoli-

gist, for the reason that it most frequently occurs in children from five to ten years of age, who are suffering from debility induced by disease, deficient food or unhealthy surroundings. It is occasionally seen in adults who have been debilitated from disease or debauchery. Local injuries and irritations from diseased teeth, and chronic poisoning by mercury, phosphorus, lead and copper (Ziegler), may also be causative factors in the production of the disease.

The disease is first manifest in the margins of the gums, usually in the anterior part of the mouth by swelling, redness, loosening of the gums from around the necks of the teeth, accompanied by tenderness or pain. The loosened festoons and margins later become very much swollen and congested, partially covering the crowns of the teeth; finally they take on a purple hue, soften and slough away as yellow masses, leaving an irregular ulcerating surface. In the more serious cases, the progress of the ulceration is rapid, and often extends to the deeper tissues, involving the border of the alveolar process, which may become necrosed, resulting in the loss of considerable portions of bone and even of several teeth. The breath is fetid, the salivary secretions are increased, and often mixed with pus and blood. The lymphatics often become swollen and tender. The cheeks and lips opposite the ulcerated portions of the gingivæ, sometimes take on inflammatory conditions and ulceration, accompanied with considerable swelling. Food is taken with difficulty.

The disease usually appears as an acute affection, but occasionally it becomes chronic, and lasts for months, in which case it becomes troublesome to cure.—(Tomes.)

The constitutional symptoms in the milder cases which involve only a limited area of ulceration, are slight febrile disturbance and loss of appetite, which lasts for a few days and subsides upon the healing of the ulcerations. In the more severe cases in which the ulceration is extensive, involving the periosteum and the bone, the temperature may run quite high, and not subside for several days. The high fever is accompanied by thirst, loss of appetite and great restlessness. The disease sometimes resembles gangrenous stomatitis; or, *gangreena oris*.

With this brief resume of the history of the various forms of stomatitis which are generally recognized, and which I have introduced for the purpose of comparison, I desire to call your

attention to another form of ulcerative stomatitis which sometimes follows injuries to the gums from extraction of teeth, abrasions from hard foods or the vigorous use of the tooth brush, etc., and for which I propose the term *Stomatitis Ulcerosa Nocens*, or *Infectious Ulcerative Stomatitis*.

The clinical characteristics of this form of the disease are the formation of ulcers at some point of injury, which at first appear in nowise different from the ordinary form of a localized ulcerative stomatitis, but which after the lapse of twenty-four to forty-eight hours, begins to spread rapidly along the margins of the gingivæ in all directions, involving both jaws and sometimes extending to the hard palate and the floor of the mouth. The margins of the gums assume a general ulcerative condition, accompanied by swelling, redness and considerable congestion of the parts, which bleed easily. Later they become covered with a dirty-white or yellowish-white pellicle or membrane—somewhat resembling the thrush film—which sloughs off after a day or two, destroying the festoons and leaving a ragged surface. The denuded surface is very red and covered with coarse granulations, which bleed upon the slightest provocation. The gums are loosened from the necks of the teeth, and the borders of the alveolar processes are exposed. Pus mixed with blood exudes from the inflamed tissue about the necks of the teeth. The breath and excretions are very fetid, and salivation is profuse. In these respects the symptoms resemble mercurial ptyalism. The ulcerated surfaces are exceedingly sensitive, and motions of the tongue and lips on this account are quite painful. Food is taken with difficulty.

Accompanying the local manifestations there is a general febrile condition, temperature ranging from 100° to 101° F., thirst, loss of appetite and general malaise, sleeplessness and irritability of temper.

In illustration of the above clinical features of the disease, the following cases are introduced:

Case 1. Mr. A., American, aged 21 years, clerk, was referred for special treatment by Dr. P. I. Lawrence, Chicago.

History: This gentleman had an abscessed lower molar of the right side extracted, which had caused considerable swelling of the jaw. The gum tissue had been somewhat lacerated upon the lingual side in the effort to remove the offending root. Two

days later he returned with the injured gum ulcerated, the ulceration spreading to the adjoining teeth. Antiseptics had been used to cleanse the mouth, the alveolus irrigated and dressed, and a listerine mouth-wash prescribed. The disease, however, spread so rapidly that in forty-eight hours the gums of the entire lower jaw were involved, and it had attacked the anterior portion of the upper jaw. This was the condition when the case first came under my notice.

Diligent inquiry could not discover any constitutional conditions, like syphilis, mercurial or lead poisoning, etc., which would account for the presence of the disease. Had however recently been ill for a couple of weeks from a mild attack of la grippe.

Treatment: The treatment consisted of first cleansing the mouth by irrigating it with a saturated solution of boric acid, followed by a 50 per cent. solution of 12 volume hydrogen peroxide in water sprayed into the mouth, and between the approximal spaces between the teeth. The mouth was again irrigated with boric acid solution, to remove all the debris and the foam caused by the use of the peroxide. After which the gums were carefully dried and protected with rolls of bibulous paper and the ulcerated surfaces swabbed with a 10 per cent. solution of zinc chlorid.

The patient was furnished with a bulb atomizer, and instructed to spray the mouth every two hours with 25 per cent. listerine solution.

This line of treatment was followed every day for a week, except the application of the zinc chloride, which did not seem necessary after the third day, as marked improvement took place from this date. The case was discharged cured at the end of ten days.

The only constitutional treatment was a saline cathartic, which seemed to be indicated to relieve a tendency to constipation. The fact that local treatment alone, except that just indicated, was sufficient to control the case, precludes the possibility of syphilitic infection being the cause of the affection.

Case 2. This patient was a married man, aged 34 years, and of English birth, formerly a practicing dentist, but now an expert accountant.

History. Patient states that he has been overworked of

late, that his gums had been congested and bled when the teeth were brushed; and thinking that perhaps he had not been vigorous enough in the use of the tooth brush, bought a new one that was quite hard and gave them a most thorough brushing before retiring. Next morning his mouth was so greatly inflamed that he could not use the tooth brush or masticate his food, or even take a cup of hot coffee. For the next two days he tried to allay the inflammation with various soothing preparations, with no benefit. At this stage of the case he presented for examination and treatment.

Examination of the mouth revealed extensive ulceration of the margins of the gums of both jaws, with ulcerating streaks upon the roof of the mouth, extending from the region of the first molars on each side nearly to the median line, and looking as though they had been cauterized with silver nitrate. The ulcerations in all parts of the mouth were covered with the same dirty-white or yellowish-white film, and all of the other symptoms corresponding to those of Case I. In Case II, however, nearly every tooth in the mouth had a ring of salivary calculus encircling the cervix. This was no doubt the cause of the congested condition of the gums which induced the bleeding on brushing.

Treatment consisted of first cleansing the mouth, and then removing the salivary calculus. In all other respects the treatment was the same as in Case 1. He made a rapid recovery, and was discharged at the end of two weeks.

Case III. Was almost identical with Case I. It originated from the same cause, viz., the extraction of an abscessed lower molar, followed by ulceration of the gingival wound, and extension of the ulcerative process to the gingival borders of both jaws. In this case, which occurred in a young Jew 24 years of age, there was a clear history of syphilis; infection having taken place two years before. He had visited Hot Springs and taken a course of treatment, but had taken no mercury or iodides since his return four months before.

The treatment prescribed in the other cases was followed in this, with the exception that after the third day of treatment, in consultation with his family physician, he was placed upon the usual course of treatment with the iodides. He rapidly improved under the local treatment from the first, and at the end of ten

days all of the local symptoms had disappeared. From this I think the inference may be safely drawn, that the local disease was not the result of his syphilitic condition, as it is hardly to be supposed that the constitutional effect of the iodides would be manifested in so short a period, while at the same time it was evident that the case was improving before the iodides were administered.

Neither can the first or third cases be fairly attributed to infection from unclean instruments, as I am sure that the greatest care was observed in both cases to prevent such a contingency. The explanation would rather, it seems to me, be that of auto-infection from the pus microorganism of the alveolar abscess coming in contact with a freshly wounded surface of the gum or from some of the other pathogenic organisms which so constantly inhabit the mouths of even cleanly persons.

The second case was also, without doubt, due to auto-infection from the last named causes, through the brushing and lacerating of the already inflamed gums, thus furnishing the only condition lacking before, to establish an infectious inflammation, which by reason of the debilitated condition of the system, it was unable to successfully resist.

The acute character of the symptoms and the rapid spreading of the ulceration from the initial point of injury seems to prove the infectious nature of the disease.

Some Points on the Etiology, Pathology and Treatment of Persistent Pyorrhea.*

BY GEO. T. CARPENTER, M.D., D.D.S., CHICAGO, ILL.

It is not my intention to give a new name to the so called pyorrhea alveolaris, but to call attention to that class of so-called incurable cases of pyorrhea, which, after all efforts at treatment on the part of both practitioner and patient, pus continues to ooze from the pocket. I do not wish to be understood as including in this class the teeth that are ready for the forceps, having lost two-thirds or more of their natural support, but teeth that in the

* Abstract of paper read before the Section of Stomatology, Amer. Med. Association, Columbus, June, 1899.

judgment of the operator should be saved, but do not yield to his attempts to eradicate the disease. The one word that covers more than any other in the handling of pyorrhea is thoroughness; thoroughness in diagnosis; thoroughness in mechanical and surgical procedures, and thoroughness in all subsequent treatment. It is very generally known and accepted by most practitioners that the extraction of any tooth affected by pyorrhea will in time result in a permanent cure of the disease. It has also been repeatedly demonstrated that in the majority of cases where pyorrhetic teeth have been extracted and thoroughly cleansed of deposits and roots trimmed, removing all roughened parts, also the pulp removed and canals filled and then replanted, such teeth grow firm and pus and pockets are not present. There must be some good reason for this changed condition, and I am convinced that this change is brought about by removing the exciting or irritating cause. I do not wish to be understood as not believing in constitutional predisposition to pyorrhea. I do not believe that cachexia, in some cases, will render pyorrhea incurable, through malnutrition. But even in this class of cases we must not lose hope. Do something and do it with thoroughness; break up the sameness of life; change the conditions. Tonic and alteratives are valuable, especially rest, sunshine and fresh air. Also constitutional treatment for syphilitic or other taints may prove very beneficial. But the exciting cases are by far the most common and will be the principal theme of this paper.

There are three points in the irritating or exciting causes of persistent pyorrhea, to which I wish to call attention, namely—

- 1st. The failure to reach, recognize and remove deposits.
- 2nd. Infection indefinitely continued from septic pulp.
- 3rd. Decalcification or molecular change in cementum and dentine.

The causes of failure in removing deposits are twofold. First, a failure to locate the deposits, and second, a failure to reach the deposit with any set of instruments now on the market. In pyorrhea cases that have received previous treatment and pus is still found present, we should make a careful differential diagnosis between deposits, pulp infection, and roughened spiculi.

To aid in this work I use 5% to 10% aqueous solution of cocain on cotton, and pack firmly into the pocket and allow it to remain for fifteen or twenty minutes, then protect the parts with

a napkin and dry the surroundings and carefully remove the cotton, holding the mouth mirror in position so as to see all parts of the pocket the instant the cotton is removed. In cases where a better view is required pack with antiseptic gauze, and allow to remain two or three days. If deposits are seen remove them if you can.

To insure success in removing deposits, I use a pyorrhea model of thirty-two natural teeth, set in rubber tubing, and arranged in upper and lower set in articulator, with a heavy rubber band in front which acts as lips, and all tooth surfaces and pockets must be reached through the rubber lips. By fastening this model to the head rest of the operating chair an instrument can readily be fitted, by using annealed stove-pipe wire for one and one-half to two inches in length in a socket handle. Flatten the point of the wire and bend so as to reach the required spot or surface. Then bend or make an instrument of the same angle, with spoon shaped point, and with it remove the troublesome deposit.

In this way any deposit, in any location, can be reached and removed. The instruments should be kept sharp for the work, and the pull motion should be used as there is danger with the push motion to dislodge and force a scale of calculi into the tissues, where it will be difficult to find it and if not removed will again become attached, and the disease will continue in a more aggravated form.

The rough deposits can be detected by the tactile sense, but the hard, smooth, or glazed deposits can only be detected by actual sight. A true alveolar abscess does not discharge pus through a pyorrhea pocket. But it is not uncommon as a result of encroachment of pyorrhea at the apex of the root, for inflammatory action to cause the death of the pulp, which becomes infected, and in turn will reinfect the cleansed or treated pockets, and this state of affairs will continue, or be repeated until the pulp is extirpated and the canals antiseptically cleansed and filled. Circumscribed abscesses may be the result of incased deposits caused by some local irritation, and swelling which forms a barrier to the free escape of pus.

From experiments, which I have been making on rabbits, I find that infecting a fresh wound in the gum, with pyorrhea or other pus, that the parts will continue inflamed from two to four

days, and then rapidly heal, but by putting a rubber band around the tooth and pressing it under the gum, and allowing it to remain and in this way establish a pocket, and then infect the wound with pus from pyorrhea or chronic ulcer, you will establish the disease, which will be self sustaining. There have been experiments made in the human mouth, where the teeth had received little or no care, but where there was no pyorrhea present with similar results as in the rabbits, but there was a tendency to outgrow the disease without treatment, but with treatment the cases yielded quickly and a cure resulted, but I think that in these cases the condition of the systems was such as to resist disease and re-establish health, and also that the exciting cause was not continued long enough or to the extent where we have deposits or other causes named in this paper.

From recent examinations for a specific alveolar pyorrhea bacillus from cultures infected by pus germs taken from pyorrhea pockets, a competent bacteriologist⁽¹⁾ has thus far been unable to find bacilli that are not found in pus from other infected traumatisms of the mouth. Yes, we mean traumatism, the same as in infected condition from a sliver in the flesh. And that is the condition that we have in pyorrhea alveolaris with the same results becoming chronic from long standing, as fistula, ulcers, etc., in other parts.

The condition of the apex of the root of some teeth will remind one of a condition known as absorption, and is generally acknowledged as such. But can a tissue be absorbed and still remain as *debris* in the pocket? Such is the condition found in pyorrhea pockets, which can be easily proved by taking the contents of a pocket, dissolving it in hydrochloric acid, then add three times its bulk of water and filter, boil and when cold add a solution of ammonia, which will precipitate the phosphate of calcium.⁽²⁾

The same result is attained by rinsing a freshly extracted roughened pyorrhea root in cold water, then with a stiff brush and water brush the roughened parts and put the resulting product into a test tube. Add hydrochloric acid and water, if necessary, and filter and boil, and to this add a solution of ammonia and the lime salts are precipitated. This decalcified

(1) The author of this experiment will give a full report of his work on pyorrhea bacilli as soon as he completes his course of experiments.

(2) Atfield's General Medical and Pharmaceutical Chemistry Calcium Reaction.

cementum and dentine through their roughened surfaces, spiculi and *débris*, act as irritants to the already inflamed tissues which are in the depth of the pocket, and, as a result, pus will continue to flow.

Many teeth affected with pyorrhea may have a pocket only on one side of their root, leaving the three remaining sides healthy. Other teeth may have only one root affected, and the other root, or roots, as the case may be, are in good condition. To illustrate, I will cite some persistent cases from practice—

Case 1. Mr. G., about 30 years of age. Employment indoors and very confining. The color of the skin and mucous membrane would suggest anemia. Lacerations or injuries to soft parts are slow to heal. He had very serious trouble after the removal of an impacted third molar. In 1898 I made an examination of his mouth and found the right upper central and left lower central affected, having deep anterior pyorrhea pockets with a profuse flow of pus. I gave both cases thorough surgical treatment, which consisted in the removal of all deposits and the curetting of pockets and margins of the process. I then filled the pockets with iatrol, which had been moistened with equal parts of oil of cassia and carbonate of creosote, and painted the gums with tincture of iodin, repeating the iodine treatment about twice a week.⁽¹⁾ He derived little, if any, benefit from this treatment. I then put the patient on tonic and alterative treatment and in about three months the pus in the pocket of the upper central disappeared and the pocket closed.

About this time I drilled into the lingual surface of the lower central and found absence of the pulp.

I used thorough antiseptic treatment of canal and filled the same with chloro percha and gutta percha points. Treatment was continued from once to twice a week for two months longer, but pus still persisted. In June I examined apex of root and found it denuded and roughened. I amputated the lower fourth of the root and rounded the stump, and the soft parts healed kindly under antiseptic treatment, and no pus has been present at any time since the operation. The gums are not yet entirely restored, but the tooth is doing good service.

Case 2. Mr. H., about 50 years of age. Has given his teeth considerable care, and I think caused pyorrhea from injudicious

(1) Dr. Talbot, Pyorrhea Alveolaris, *International Dental Journal*, April, 1896.

use of the wooden toothpick. Has had several teeth affected by and treated for pyorrhea during the last ten years, and in all but two cases a cure has been effected. In June, 1898, he was referred to me by a brother practitioner and on examination I found the upper right second bicuspid and first and second upper right molars, also the interproximal space between right lower second bicuspid and the first lower molar, also lower central on same side, diseased.

He had an old chronic pocket on anterior root of left lower first molar. This tooth and the first upper molar on the opposite side had been treated by a good dentist and given up as hopeless about eight years previous, and the patient was instructed to use a syringe with an antiseptic to keep the pockets clean, as the best that could be done for them. I gave the usual surgical treatment, as in the former case, for the four other teeth, which yielded readily and a cure was effected.

At my solicitation the gentleman allowed me to experiment with the two chronic cases. On examination I found the pulps dead in both teeth, which were removed and the canals filled. I then gave them both a most thorough surgical treatment, which resulted in the almost entire cessation of pus for a short time, but the old condition was resumed. I re-examined the pockets for cause and continued antiseptic and stimulating treatment until September, when I considered the case hopeless and decided to amputate the roots. In the upper molar I removed the anterior buccal root.

The soft parts closed up and yielded readily to treatment, and we have not had the appearance of pus up to the present time. After becoming satisfied with the result in the upper molar, I amputated the anterior root of the lower molar with similar results. The teeth are now doing good work with an absence of pus. The roots were found roughened and slight nodules of cementum around the apices showing nature's attempt to recalcify and thus produce a cure. Many other cases could be reported to show the success following the thorough removal of the cause for persistence of pus in pyorrhea, which to my mind proves the local character of the disease and that malnutrition plays but a small part when the actual irritation is removed.

The Relative Toxicity of Cocain and Eucaïn.*

BY A. H. PECK, M.D., D.D.S., CHICAGO.

Professor of Materia Medica, Therapeutics, and Special Pathology, in Northwestern University Dental School, Chicago.

IT is not my intention in this paper to especially refer to the anesthetic properties of cocain, but only its toxic effects relatively with those of eucaïn, as observed in actual practice and as determined by original experimentation.

Unfortunately cocain is, in its action, one of the most inconstant and unreliable drugs in the whole pharmacopeia. It will always produce anesthesia, if properly used, and also frequently produces poisonous symptoms, oftentimes alarming. If a certain quantity of arsenic or morphia, or almost any other known poison be used under certain circumstances, the resulting symptoms are nearly always the same; we know what to expect. It is unfortunate that the same cannot be said of the action of cocain. I have often seen the most alarming symptoms of systemic poisoning result from the use of a certain quantity of cocain, which in other individuals, a like amount under seemingly the same conditions, produces no bad symptoms. There is no other drug in the whole realm of medicine, in connection with the action of which individuals vary so much in point of susceptibility. I have seen all the stereotyped symptoms of systemic cocain poisoning result from the use, in a pulp canal, of a small quantity of a one per cent. solution, while again I have seen injected into individuals 20 minims of a two per cent. solution, and this being repeated as high as four times without poisonous symptoms resulting. I firmly believe that cocain produces, in some, local poisoning as well as systemic poisoning, notwithstanding the fact that many disagree with this statement. I have seen from the subcutaneous use of cocain, for the extraction of one root of a tooth, three good teeth lost, with extensive destruction of the alveolar plates of bone, together with extensive sloughing of the soft parts and all this in the absence of any systemic symptoms. Some, no doubt, will say this is the result of infection by an unclean

* Abstract of Paper read before the Section of Stomatology, Amer. Medical Association, Columbus, June, 1897.

syringe. But how is it to be proven that this is the case? The work has been done under the most careful antiseptic precautions. I have seen so many cases of local poisoning in varying degrees result from the use of this drug, that I am forced to the belief that it possesses local toxic properties as well as systemic toxic properties.

As in eucaïn "B," there is much to be said in its favor as compared with cocain. During the past year I have frequently used it in practice for devitalizing pulps, for local applications, and by injection, and have as yet observed no evil effects of note. Eucaïn, however, is not capable of producing the same degree of anesthesia under like circumstances as in cocain. This has been proven beyond the possibility of a doubt by the experiments I have made. As this paper is to deal only with the toxic properties of these drugs, I will not here discuss their anesthetic properties.

Last year, while experimenting extensively with the essential oils, using guinea pigs largely, I did some work with cocain and eucaïn, enough to demonstrate that there was an interesting field in contrasting the two. Since then I have experimented extensively with these agents, using guinea pigs.

How completely is the statement that cocain varies much in its action demonstrated and proven to be correct by the following experiments: The first one serving to exhibit the poisonous propensities of the drug, and this, too, in the absence of any marked anesthetic effects. A pig, weight $8\frac{1}{2}$ ounces, into which was injected 20 minims of a 2 per cent. solution of cocain, which amount represents 3-20 of 1 grain, after the lapse of eight minutes showed some indications of anesthesia, but these were comparatively insignificant. For the next six minutes various symptoms of distress were exhibited, such as a general spasmodic jerky action of all the muscles of the body, accompanied with evidence of pain. At the end of fourteen minutes its hind legs were partially paralyzed and one minute later it fell on its side completely overcome. Its head was firmly drawn back, all the muscles of its body being rigid; this condition would, at short intervals give way to a distressful spasmodic action, general in its scope, and thus these sets of symptoms continued to alternate for a period of five minutes. During these twenty minutes the animal was not anesthetized to any appreciable extent, responding vigorously to a prick of a needle at any portion of the body.

The heart action at first was somewhat depressed, but soon recovered, and thereafter its contractions were strong and rapid, evidently being much stimulated. The respiratory organs, at first slightly stimulated, were very soon depressed, and remained so until recovery set in. After twenty minutes it began to recover and at the end of twenty-five minutes could stand on its feet; however could not walk without falling. At the expiration of forty minutes recovery was far advanced. This experiment shows the toxic action of the drug with the absence of anesthetic effect, better than any other on my list. While the poisonous properties of this drug are frequently manifested, they are usually accompanied with anesthesia.

[The next experiment cited showed in just as interesting and decided a manner the anesthetic action of the drug to the exclusion of nearly all manifestations of poisonous symptoms, and to the mind of the author, effectually settled the question of inconsistency of the action of cocain.—ED.]

Let us now study the action of Beta Eucaïn, under similar circumstances. Twenty minims of a 2 per cent. solution of beta eucaïn, or $\frac{3}{20}$ of one grain, were injected into a pig of $8\frac{1}{2}$ ounces weight. At the expiration of thirteen minutes slight evidence of anesthesia—or perhaps better said, the action was that of a mild hypnotic, the animal appearing somewhat drowsy, at the same time all reflexes responding to any interference by way of pricking. The action of the heart and respiratory apparatus was slightly depressed. Three minutes later recovery commenced, and at the expiration of twenty minutes the effects of the drug had largely passed away. Two minutes later another 20 minims, or $\frac{6}{20}$ of one grain in all, were injected. Five minutes later slight evidence of nausea was observed; at nine minutes the hypnotic action was more marked and was accompanied with slight evidence of true anesthesia. Its hind parts were somewhat paralyzed, and the reflexes slightly blunted. The heart action and respiration were more depressed than at first. At eighteen minutes it began to recover and at expiration of twenty-five minutes, or forty-seven minutes from time of first injection, was able to walk about. One minute later, or forty-eight minutes from time of the first injection, a third injection of 20 minims, making $\frac{9}{20}$ of one grain in all, was made. Five minutes later nausea developed and the animal seemed much distressed thereby. The heart

action and respiration being at first stimulated, soon became much depressed; after ten minutes twitching of all muscles of the body, spasmodic in character, developed; this condition increased until, at the expiration of eighteen minutes, the animal fell to the table completely exhausted. Its head was firmly drawn back, all the muscles being at high tension; rapid winking of the eyes continued, with gasping for breath and twitching of ears. For the next twenty minutes this condition continued, with violent tetanoid spasms of all muscles following one another in rapid succession, each spasm being accompanied with mournful squealing, which seemed to indicate much distress and pain. At no time were the reflexes, either plantar or cremasteric, lost; neither was there much evidence of general anesthesia; indeed, the entire action seemed to be more that of a paralyzer than of an anesthetic. The heart action and the respiratory apparatus were much depressed. At times the heart-beat was almost undiscernible, and the animal would gasp distressingly for breath. At the expiration of this twenty minutes, signs of recovery developed and at the expiration of twelve minutes more it could stand on its feet, but could not walk without toppling over. It was now very late, and the animal was placed in its box, and in the morning was found to be none the worse off for its experience. This case is interesting in that it seems to prove conclusively that, at least, three times the quantity of beta eucain is required to produce virtually the same degree of toxicity as is produced by cocain. These results, or this action of the two drugs, as related in this experiment and the first one with cocain, I regard as bearing directly on their toxic properties. Alpha Eucain has proven to be virtually on a par with cocain as to toxic properties. Five-sixths of one grain is the limit as to fatal action with pigs of 25½ ounces weight.

By way of recapitulation, my experiments lead me to conclude as follows:

1. The action of cocain is inconstant; one never knows whether the symptoms occasioned by like quantities of the drug, in animals or individuals, under like circumstances, will be similar or dissimilar.

2. The action of eucain is constant. The symptoms occasioned by the use of like quantities in animals under like circumstances, and so far as my experience has gone, in different individuals also, are the same.

3. That the first action of cocain on the heart is that of a depressant, and on the respiration is that of a mild stimulant; the after effects being, on the heart, that of a decided stimulant, and on the respiration that of a depressant.

4. That the first action of eucain, on both the heart and respiration, is that of a stimulant, the after effects being that of a decided depressant.

5. That cocain causes death in animals by paralyzing the muscles of the respiratory apparatus; the heart's action continuing in a feeble way for a brief period after breathing ceases.

6. That eucain causes death in animals by paralyzing the muscles of the heart and of the respiratory apparatus, they ceasing to operate simultaneously.

7. That eucain in toxic doses nearly always causes nausea and occasionally vomiting.

8. That cocain is much less nauseating and scarcely ever causes vomiting.

9. That eucain is decidedly a diuretic, causing renal discharge in a majority of instances in which a toxic dose is used.

10. That cocain is not to any appreciable extent, renal discharge having occurred in only one instance in connection with all my experiments.

11. That the pupils of the eyes in nearly all cases of cocain poisoning, do not respond to light and are more or less bulging from their sockets.

12. That the pupils of the eyes in most cases of eucain poisoning do respond feebly to light, and rarely ever bulge from their sockets.

13. That the action of toxic doses of eucain is more like that of a paralyzing, tetanoiding, convulsion-producing agent than it is like an anesthetizing one, the plantar and cremasteric reflexes nearly always responding.

14. That toxic doses of cocain cause general anesthesia with the other symptoms in the majority of cases.

15. True tetanus, of all striped muscles of the limbs, and Cheyne-Stokes breathing nearly always occur when eucain is used.

16. That cocain is at least three times more toxic than beta eucain and that alpha eucain is as toxic as cocain.

17. That boiling does not destroy the efficacy of cocain, but

that it does modify it, and that boiling in no degree lessens the efficacy of eucain.

The above conclusions have been formed only after many experiments in connection with each individual point. I have observed in my work many interesting features in connection with the relative worth of these drugs as local anesthetics, but this paper is not to treat of this phase of the work. There is much experimental work yet to be done in this connection, the results of which I shall be pleased to present at some future meeting.

The Human Face and Jaws as a Danger Signal of Systemic Defect or Disorder.*

BY J. G. KIERNAN, CHICAGO, ILL.

MAN is a compound organism made up of many different organs, structures and systems which have their own life albeit subordinate to the life of the organism as a whole. These structures, organs, etc., draw upon a fixed supply of nutriment, and unless this nutriment be properly distributed through the system of checks summed up in the nervous system one organ or structure will receive more than its undue proportion of nutriment. The balance kept up by the checks is disturbed when the organism becomes nervously exhausted either from nerve tire, from general disease, or from other cause. If this exhaustion occur at a certain period, called the periods of stress, or of involution and evolution, certain structures on which is thrown peculiarly such stress are apt to be affected either in the direction of arrested development or of hypertrophy. Prominent among the structures which mark these periods are the jaws and the teeth, considered together. The period of the first dentition is one of these periods of stress during evolution.

The period of the second dentition is another evolutionary period of stress. The appearance of the so-called wisdom tooth marks a third period, while the disappearance of the teeth from senility is the period of involution. These conditions of nerve strain may affect the organism of the individual so that not he

* Abstract of paper read before the Section of Stomatology, American Medical Association. Columbus, June, 1899.

but his descendants show the effects. To this result are often due the irregularities of the jaws and teeth resulting from the lack of balance of the proper distribution of nutriment. The defective palates are also an expression of this strain and not of conditions like mouth breathing due like the defective palates to hereditary defects evincing itself during the evolutionary periods of stress or at birth. These irregularities are danger signals prophesying what may happen the child of the nervously exhausted individual unless there be proper training at the periods of stress. Training which will involve brain, nervous system, nutrition and excretion. The degeneracy which results from nervous exhaustion is a prophesy of what may be rather than a destiny. As the dentist is among the earliest of the medical specialists to whom application is made it comes within his power to outline a course of training and treatment which will prevent the child evincing irregularities from becoming a moral lunatic, an imbecile, paranoic, a sexual lunatic, or a victim of less forms of degeneracy. Here is a point at which the dentist is afforded an excellent opportunity to take part in the beneficent work of prophylaxis of the medical profession which has done so much for the race. The three dentitions as they are called appropriately by Dr. Talbot, mark three periods of systemic evolution when it is possible to affect, the mental and physical development favorably.

The Therapeutics of Inflammation.*

BY WARREN B. HILL, M.D., MILWAUKEE, WIS.

THERE is a common ground upon which dentists and doctors may meet, and the therapeutics of inflammatory conditions about the mouth, though a place oftentimes studiously avoided by both professions, should be cultivated in common by both. The rational treatment for all inflammatory processes is to remove the cause, if possible. This usually takes us into the field of surgery, as nearly all the inflammatory processes are of bacterial origin, but there is still left for the therapist an opportunity

* Abstract of paper read before the Section of Stomatology, American Medical Association, Columbus, June, 1899.

of relieving the pathological conditions present when the other alternative is not to be accomplished or during the time when a diagnosis is being made.

Heat and cold are the two remedies most extensively used for the relief of congestion and pain and there has been considerable discussion as to which is the more efficacious for this purpose. The up-to-date surgeon advocates, when he appears before a learned body of his professional brethren, the use of cold only, as that impedes the propagation of the germs which he assumes cause the trouble.

In his private practice, however, he allows the use of hot applications and poultices, because it relieves the pain, and nobody will find out how antiquated his practices are in comparison with his precepts. On the other hand, the empiricist adheres strictly to precept and practice to the use of hot applications, because experience has taught him that it alleviates the two prominent symptoms present, engorgement and pain.

For my part, however, it appears that each has a proper place in the therapeutics of inflammation without violating the laws of reason or repudiating clinical experience.

In the first stage of inflammation, when there is dilatation of the afferent blood vessels and an increase in the rapidity of the flow of blood, cold applied to the part will contract these vessels and prevent the subsequent engorgement, and in this manner pain may be avoided. On the other hand, when the engorgement is already present and the blood stasis has supervened, then the application of heat will dilate the afferent vessels, relieve the engorgement and alleviate the pain.

This same principle applied to internal medication will also be useful in the relief of these symptoms. The immediate indications in the treatment of these conditions are the relief of pain. In true inflammatory processes pain is caused by the engorgement of the blood vessels and the impingement of the nerve filaments by the consequent exudate. The rational method, therefore, of relieving it is to reduce the arterial tension. This may be done by dilating the peripheral vessels, either by the use of diaphoretics, cardiac depressants, or counter irritants.

Arterial tension is also reduced by the use of hydrogogue cathartics, and congestions about the head are particularly benefited by the use of cholagogues. On the other hand, opiates, by

checking alimentary secretion and increasing the blood supply to the head, not only fail to be useful, but are contra-indicated, except when given in the form of Dover's Powder, which acts as a powerful diaphoretic and relieves the congestion. In painful affections of an aesthetic type, such as in neuralgias caused by the faulty nutrition of the nerve centres, they act promptly and well. In treating inflammation about the mouth I think the following hints will be of service: First, a powerful purge, such as calomel in 10 grain doses, should be given, followed by a saline cathartic. Second, a coal-tar analgesic acting upon the skin, such as antipyrin in from 5 to 10 grain doses, or, in people of rheumatic tendencies, salol and phenacetin in 5 grain doses each, or acatanilid and salicylate of soda in similar doses. If, on account of the condition of the patient, these heart depressing coal-tar derivatives may not be deemed advisable, Dover's Powder in 5 to 10 grain doses may be substituted.

This treatment is not calculated in any way to remove the cause of the malady, but rather to mitigate the pathological conditions present during the time of diagnosis and the completion of the surgical procedure. In inflammation, especially in the bony cavities about the mouth, such as pulpitis, this treatment will be found to be particularly valuable, as a considerable time often elapses before an accurate diagnosis can be made. The rationale of this treatment is apparent as the lowering of the arterial tension by cathartics and diaphoretics not only prevent any further exudate and consequent pain, but also promotes absorption, while the coal tar derivatives have specific analgesic properties. Illustrative of this point I wish to relate a case. Mr. X., age 45, a laborer, was attacked with severe headache. A physician was consulted who pronounced it neuralgic in its nature. The patient was told to consult a dentist, who extracted one or two teeth in the neighborhood of the most painful portion of the jaw, from which the pain seemed to start. This afforded no relief. The dentist was asked to remove the one remaining tooth, which he refused to do, because it was perfectly sound. He was referred back to the Doctor, who was convinced that his diagnosis was wrong and proceeded to treat the case symptomatically, as he had no basis for a diagnosis.

Morphine was given in 16th grain doses, which was increased until the patient received 13rd of a grain every three

hours, the result being that the pain increased to such an extent that he could not lie down at all. At the same time, he could not stay awake long enough to stand up. When in this pitiable condition, I was called to see him. I made a diagnosis of a circumscribed inflammation within a bony cavity and too much morphine, and prescribed 10 grains of calomel and 10 grains of jalap to be taken in one dose, followed in four hours by one ounce of Epsom salts. The relief was remarkable and to my mind strengthened the diagnosis. Dr. G. V. I. Brown was called in consultation and a careful examination was made. Percussion elicited the fact that an inflammatory process was going on in the pulp of this apparently sound tooth. Dr. Brown removed the cause and an immediate recovery followed.

The conclusions that I wish to draw from this case are: First, that patients should not be sent from doctor to dentist and back again when a consultation is possible; second, that we should not take such a radical view of surgical procedure as the only method of curing inflammatory processes, as to prevent our using all possible means for the relief of the patients during the time when a diagnosis is made and the surgical treatment instituted; third, that we should not resort to the promiscuous use of opiates or any other analgesic as a temporary measure when the pathological conditions may be treated rationally; fourth, having made our patients comfortable we should take plenty of time to make an absolute and accurate diagnosis, thereby saving the patient the annoyance of undergoing unnecessary and painful operations and possibly preserving for him his teeth or other necessary organs.

Section of Stomatology, American Medical Association.

NOTES ON DISCUSSIONS.

A PAPER on Cocain and Eucaïn, their Relative Toxicity, was read by Dr. A. H. Peck, of Chicago. After reading his paper, Dr. Peck produced three Guinea Pigs and injected them with alpha eucaïn, beta eucaïn, and hydrochlorate of cocain, in doses intended to show relative toxicity with uniform results.

The first pig weighed $32\frac{1}{2}$ ounces, and one grain of hydroch-

lorate of cocain dissolved in twenty drops of water (a 5% solution) was injected hypodermically. In five minutes the pig fell over in convulsions, which became tetanic in eight minutes and one-half. In nine minutes from the time of the injection the pig had ceased to breathe, dying from paralysis of respiration.

The second pig weighed thirty-two ounces. One grain of alpha eucain, dissolved in twenty drops of water (a 5% solution) was injected hypodermically as before. In five minutes the heart's action became very weak and respiration short and quick. In seven and one-half minutes from the time of the injection the pig jumped up from the table and fell in violent spasms, which continued for seven and one-half minutes, when the posterior extremities became paralyzed. The anterior extremities never lost their function. The heart and respiration were greatly, but not so much depressed as by the cocain. The pig recovered in about an hour.

Pig No. 3 weighed nearly twenty-eight ounces. Into this pig was injected three grains of beta eucain in twenty drops of water. The pig apparently suffered no great inconvenience, except as was made known by grinding his teeth. The respiration and heart's function were slightly depressed, but the pig recovered without spasms or other unhappy symptoms.

Dr. J. S. Marshall, of Chicago, read a very interesting paper on "Infectious Ulcerative Stomatitis."

Dr. Crawford highly commended the paper. He was particularly interested to learn that "La Grippe" was considered an active cause of this trouble. He approved the treatment indicated by Dr. Marshall, but would suggest, also the application as a disinfectant escharotic to the ulcerated patches, as the eschar would serve to protect the sensitive tissues.

Dr. G. V. I. Brown could not indorse irritant or escharotic treatment because of liability to unnecessary destruction of tissue or exaggerated inflammation. He preferred simple disinfection with such non-poisonous agents as per oxid of hydrogen.

Dr. H. A. Smith cited a case of sloughing of the mucous membrane of the entire lower jaw.

Dr. Talbot said that by many this disease is thought to be a form of, or intimately associated with pyorrhea alveolaris, but it is more probably due to inanition or faulty metabolism. Suggested thorough cleansing with plenty of water, containing some mild disinfectant, such as listerine.

Dr. Heise could not agree with the statement that benign tumors never become malignant.

Dr. Bonwill said he was interested in the paper, as it promised to call the attention of dental practitioners to these cases and would cause them to study these conditions so that they might prescribe for them and cure them as readily as the physician.

Dr. Noyes cited a case of a young lady for whom he was regulating the teeth, who presented herself on one occasion with a serious case of stomatitis. The mucous membrane of the nose and throat were also badly inflamed. At the time, the young lady's father was suffering from erysipelas. At the time he feared infection from possible contagion.

Dr. Marshall stated that he would use nitrate of silver in aphthous stomatitis or in stomatitis with isolated patches. But in general and diffused ulcerative stomatitis, he would prefer the zinc chlorid, because of its astringent as well as disinfectant and antiseptic action. This condition is not often due to the presence of a specific systemic disease, as it develops too rapidly. It does not become malignant, as develops from the superficial tissues. Neither can it be associated with pyorrhea alveolaris. A pyorrhea develops very slowly and ulcerative stomatitis with great rapidity.

Dr. G. V. I. Brown showed a large photograph of a young man who had been burned on the face and neck while a lad. The cicatricial tissue had greatly disfigured the young man and in a measure made him helpless. By several operations the case was materially bettered, and the patient presented a very much improved appearance. There was a resection of the lower incisor and cuspid teeth with a good union and very satisfactory result. Dr. Brown explained the details of the operation and was generally congratulated on its success.

Dr. Bonwill showed how such operations could be readily made by using the dental surgical engine. Exhibiting his improved dental engine, which he hoped soon to place on the market.

Several papers were read as a symposium, on pyorrhoea alveolaris and diseases of the peridental membrane, and discussed together. These papers were by Dr. Bonwill, on its cure by methods to restore normal articulation; by Dr. Fletcher, on "Neuralgia due to Periosteal Necrosis;" by Dr. Carpenter, on

"The Treatment of Persistent Pyorrhœa Alveolaris;" by Dr. Noyes, on "The Histological Structure of the Peridental Membrane;" and Dr. Talbot, on "Interstitial Gingivitis."

All of these papers will be printed, with the exception of Dr. Talbot's, which appears as a chapter in his new book, just issued. He gave the result of a long series of investigations on dogs, to determine the prevalence of pyorrhœa alveolaris in these animals. He has had a large number of dogs from the dog pounds of Chicago and Milwaukee, examined, and finds that 25 % of dogs less than four years old have pyorrhœa; 80 % of those from five to ten years have it, and 95 % of those from 12 to 14 years have it. Dr. Talbot has found there is more than one method of degenerative absorption. Besides the usual osteoclast absorbent method, he recognizes a senile degeneration, or osteomalacia; and a third inflammatory process through the Haversian canals, accompanied with destruction of the arterial coats.

A general and somewhat brief discussion was had of the papers.

Dr. Marshall indorsed, unqualifiedly, Dr. Bonwill's statement that after operating for pyorrhœa, the wounds should not be continually irritated by prolonged instrumentation. The operation should be completed, if possible, at the first sitting, and then allowed to heal, using only medication as indicated to encourage healing and prevent infection. He would object to Dr. Fletcher's application of the term caries to the peridental membrane; preferred suppuration or gangrene. He would also object to the term serumal deposits; but believed abscesses may be formed in the interstitial structures, from the blood. In regard to the epithelial structures, shown in the slides of Dr. Noyes, he thought they could be accounted for as remnants of embryological development.

Dr. Fletcher could not consider the structures shown by Dr. Noyes, normal, but would regard them as anomalous. Nature does not build such tissues elsewhere in the body, and why here? The cells are not shaped like epithelial cells, and do not react to the stains for the other cells. He thought they were mesoblastic in origin. Dr. Fletcher thought the destructive onslaught on the peridental membrane were of bacterial origin, and the periosteum broken down without suppuration, because it could not resist the onslaughts of the micro-organisms. The destruction was similar in kind to a chemical abrasion.

Dr. Heise could not fully indorse Dr. Fletcher's interpretation of the dissolving process which takes place in the peridental structures. In Dr. Carpenter's suggestion of extirpating pulps and excising roots of teeth, he saw a dangerous practice if indulged to any considerable extent. While it might assist in eradicating the disease, it would certainly impair the usefulness of the teeth and shorten their existence.

Dr. Noyes said that if the structures shown in his slides were mesoblastic, as Dr. Fletcher suggested, they could not be glandular. They are located in a mesoblastic structure, but he believed they were epithelial in character. They react to all the characteristics of epithelial structures.

Dr. Brown thought pyorrhœa was of local origin, often caused, at least influenced, by accidental conditions or circumstances. He was not prepared to say that mal-occlusion of the teeth would entirely account for it, but no doubt it would be instrumental in producing certain characteristic absorptions. He thought operative interferences to correct mal-occlusions might be of great value.

Dr. Carpenter thought the two great factors in the cure of pyorrhœa were cleanliness and rest, and yet a certain amount of intelligent medication will be necessary in many cases. He would recommend for the pockets as a stimulating antiseptic, the following:

R Carbonate of creosote.

Oil of cassia - - - - - ā ā 3j

Iatrol q. s. ad for a paste.

Dr. Heise recommended a similar application, a paste composed of iodoform in lactic acid to proper consistence.

Dr. Bonwill in discussing Dr. Hill's paper objected to the use of calomel and jalap as revulsive cathartics. They produced excessive drastic catharsis, and would result in more harm than good. He preferred to treat peridental congestion with a bistoury, producing considerable bleeding, by rapidly stabbing into the gum, over the affected tooth. He would not send his patient to a medical man for systemic treatment, but would resort to local operative measures.

Dr. Brown could not agree with Dr. Bonwill. Patients are often saved much suffering by subjecting them to a season of systemic treatment preparatory to dental operations. Has had

very satisfactory consultations with medical men. Physicians can and do relieve pain promptly by early and proper application of systemic anodynes.

EDITOR'S NOTES.

Proceedings of the Section of Stomatology, American Medical Association.

THE meeting at Columbus was the best ever held and all of the papers were founded on original research. Different phases of so-called pyorrhea alveolaris were presented in several papers which furnish much food for thought and further investigation.

It gives us pleasure to be able to present the proceedings in this issue of the OHIO JOURNAL, in a manner they have never before been presented. Every paper is valuable and should be carefully perused. A few of the papers had not been received up to the time of going to press, but these we hope to be able to publish next month.

Valuable Material Laid Over.

ON account of giving the entire space in the August number to the proceedings of the American Medical Association, Section of Stomatology, a number of valuable papers and other material, book reviews, etc. have been crowded out, but will appear in an early issue.

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CONTRIBUTIONS.

How to Make an Artistic and Perfect Gold Crown.

BY JOHN W. LOPPENTHIEN, PH.G., L.P.M.O., D.D.S., LUDINGTON, MICH.

TAKE your measure for the band in the usual manner, solder your band, and festoo and place in position, taking care not to force the band under the gum too far; if you do it will act as an irritant, and you have trouble booked ahead. There is no need of driving the band in place with a mallet, if you have been careful in taking your measurement; press it in place with your thumb, having your band in place, now contour the same so as to get a perfect contact point, now remove, and with a file, file the head of the band perfectly flat, place back in position, and see that your contact point is correct, and the band fits the root accurately, then take an impression and bite with the band in place.

Next place on an articulator and fill your impression and bite, when hard, separate, and fill your band with impression material or plaster of Paris, using enough of this material so as to get an imprint of the occluding tooth, allow to harden, and with a sharp pointed blade, carve your cusp out of the material placed in the band. Taking an impression of the same tooth in the opposite side of the oral cavity will aid you very much as a model to have before you to work by; pay particular attention to

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carve your tooth just inside the band, or in other words, carve away your material to the inner surface of the band, shape your cusps, sulci, ridges, etc., close your articulator, and being satisfied as far as you have gone, take an impression of the cusp you have carved in Melott's Compound as far as the band, just enough to get an outline to show you where to trim your cusp, run up a die and counterdie, and swedge, annealing your gold after each swedging, and drive in place with a soft piece of wood before using the die you will very seldom tear your gold.

Having swedged your cusp, trim the same, and with a file, smooth, so that it will fit the band accurately, and if you have done your work well it cannot fail to fit. Now fill your cusps, wire your cusp and band together and solder, dip into a solution of sulphuric acid, rinse in water, and with a file or carborundum stone, grind down the margin, then using a disk to remove the scratches, polish as you see fit. By carving your crowns, you are sure of a correct and perfect articulation, besides you are doing an artistic piece of work, something that resembles the tooth as it originally was, excepting the color. Never use a die plate. Carve your crowns to suit each and every case. Just try it, and you will be surprised at the result. The majority of gold crowns would not indicate what in the world they were intended for, were it not for the fact that you see them in the mouth. Carve your crowns, and be artistic and do justice to your patient and yourself.

Our Present Knowledge of Dental Caries.*

BY H. PRINZ, D.D.S., ST. LOUIS, MO.

DENTAL caries is a universal disease of the human race; its origin may be traced back to the earliest obtainable data of history. The affection is relatively unlimited and of such importance to the dentist that we may safely say: Without dental caries we would have no dentists. In consequence of its universality, investigators have been occupied from the earliest days to find an explanation of its cause. The various theories which were brought forward are in harmony with the ruling doctrines of the healing

* Read before the St. Louis Dental Society.

art and changed accordingly with the advancement of medical knowledge. The pathological history of caries may be classified in six groups:

(1). The humoral theory of Hippocrates, (4566 ch.) It was still upheld by Serre in 1788.

(2). The theory of inflammation of Galen (131). Boedecker and the late Abbott have been its strongest advocates.

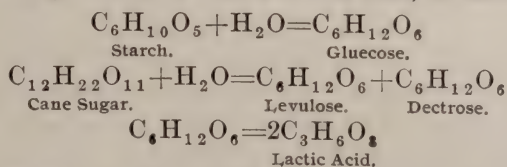
(3). The parasitic theory of Ringelmann, 1884.

(4). The chemical theory. It was indorsed by the leading scientists up to 1884. Such men as Tomes, Watt, Taft, Magitot, Baume, Harris, etc., are found amongst its upholders.

(5). The electro-chemical theory, first advanced by Bridgmann, at present it is still defended by Palmer; and

(6). The chemico parasitic theory, first mentioned by Erde, in 1843, later by Leber and Rottenstein, Black, Miles, Underwood, etc.

Miller finally demonstrated, by actual experiments, the direct etiology of the disease which he thus sets forth. The cause of dental caries is a chemico-parasitic process of two distinguished stages: the decalcification or softening of the tissue and the dissolution of this softened tissue. The acids which cause the old calcification of enamel and dentin are for the most part produced directly in the mouth as a result of fermentation—carbohydrates, namely such which contain sugar, starch and gummy substances, as sweets, bread, potatoes, etc., furnish ample material for the process. By the action of the organized ferments of saliva, *i. e.* ptyalin, hydration is installed, splitting the higher compounds, such as sugar and starch, in the more simpler ones, mostly gluecose. The bacteria of the mouth will then cause the further splitting of the gluecose, or similar molecules, in lactic acid.



Caries usually begins with the destruction of the enamel. Through the able researches of J. L. Williams of London, England, much light has been thrown upon this hitherto dark phase of pathology. By his superior histological technique he was fortunate to demonstrate more clearly the formation and composition

of the tissue which he found to consist of a calcified cement substance and of prisms, composed of globules of uniform size. Dilute acids which are brought in contact with enamel seemingly destroy the binding substance more readily than they do the prisms themselves. The remnants of Nasmyth's membrane in the sulci and the approximal spaces of the teeth, give ready starting points for the lodgement of food-material, which furnishes an excellent pabulum for the growth of bacteria. Thick, felt-like masses of acid-forming micro-organisms may be seen at these places adhering to the surfaces of the teeth. This mass of fungi is so dense and adhesive as to make it highly improbable that the enamel is affected, except in rare or special instances, by any acid other than that which is excreted by the bacteria at the very point where they are attached to the enamel. This thick, gelatinous-like mass of fungi also prevents the excreted acid from being washed away, so that it exerts its full chemical power upon calcific tissue. The decalcified enamel and dentin often do not break down directly. Caries may advance rather deeply before the formation of a cavity occurs. The progress of destruction is probably depending upon the organism present or rather upon its acid producing capability.

Miller separated twenty-two different species of bacteria from the human mouth, sixteen of these brought about an acid reaction, some others possessed the power of converting sugar into lactic acid, some other forms produced gases, etc. He was able to produce artificial caries in all its phases by using mixed cultures from the mouth but failed to attribute this power to a single organism. Caries, undoubtedly, results from a mixed infection of fungi. In a recent paper, Williams describes a new organism which he found almost constantly present in the oral cavity, more so in healthy mouths even after fair sterilization. The same bacterium has been described by Vicentini of Naples, Italy, and is called by him, *Leptothrix racemosa*. By ingenious microscopical methods Williams succeeded in completely demonstrating the different stages of spore-formation of this organism. By exhausting the pabulum and by changes of the surroundings, the morphology of certain species may be altered to such a degree as to exhibit entirely new forms which may lead to misconception on the part of the observer. The belief that there are far fewer bone species of bacteria than have been catalogued has steadily gained ground

among botanists and histologists, if not among pathologists. The assertions of Dr. Williams may lead to very far-reaching conclusions and are seemingly incomprehensible if based upon our present conception of bacteriology.

By the dissolution of the enamel, a gateway is opened to the invading bacteria upon the less resistant dentin. Caries progresses in a cone-shape form, the apex being pointed towards the pulp. In mounted sections of well-developed caries we may be able to define four distinct zones. The first or outer layer is the so-called transparent zone. It is only found in teeth with life pulps, never in replanted teeth or in artificial caries. This seems to point to the fact that some vital process from within the tooth is connected with the phenomenon. Miller indorses Walkhoff's theory, viz: an increased activity of the cells which results in an over-production of intercellular substance. Transparency is an optical phenomenon; it merely indicates that two mixed substances have the same angle of refraction and are therefore penetrated by the rays of light. Black objects to the vital reaction; to him this change is the first stage of reorganization.

Wellauer claims: No caries without transparency. It seems plausible to accept Walkhoff's theory; the lumen of the dental tubuli is reduced by calcification and the per cent. of lime salts of the dentin in this zone is increased as shown by analysis. Nature seems to build a barrier towards the advancement of disintegration. Clinical experience verifies this fact. Transparency, as well as pigmentation are merely secondary matters in the progress of caries. The latter may be co-incidental either with chromogenic bacteria or with food-material which lodges in the cavity. All stages, from light yellow to black are observed; the quicker the advancement of bacteria, the less pigmentation.

At present, we must admit without doubt that the destruction of dentin is a chemical process, viz: a decalcification by an acid. Carious dentin has lost more than two-thirds of its unorganic constituents. The decalcification is more pronounced in the periphery, lessening towards the apex. A well-defined microscopical picture will show the central caries penetrating the enamel and spreading laterally in the dentin and towards the pulp. Bacteria are usually smaller than the lumen of the dental tubuli; hence, the latter offer a ready gateway for their advancement. This shifting forward is not necessarily equal in all directions, it

is materially influenced by the resistance of dentin-molecules. The superficial layers of softened dentin are filled with bacterial forms; the deeper layers of softened dentin are not infected. The decalcification precedes the invasion of the bacteria themselves into the dental tubuli. This is a most important point in consideration of its clinical value. Such dentin has evidently not lost its entire vitality; it is often hypersensitive. Furthermore, a thin layer of such dentin, if left over the pulp impregnated with some strong antiseptic, will give no rise of recurrence of decay. It might even be and seems to be verified by clinical demonstrations that the once softened, but uninfected dentin may reconstruct itself. By observing slides under high power one finds the dental fibrillæ often obliterated, loose fragments surrounded by cocci are seen here and there.

Cement caries progresses very much the same as in dentin. Sharpey's fibres are first affected and the bacteria follow the path of these fibres.

After having briefly passed over the more important facts of the pathological changes in the tooth substance, we may now consider for a few moments the predisposing causes of caries. From Miller's explanation of the phenomenon which has been so masterly supplemented by Williams' beautiful microphotographs, we know that the conditions in regard to the predisposing causes of caries must be sought for in the tooth itself or in its surroundings. Structural defects of the enamel, viz: fissures, pits, or defects of form of the tooth will offer ready spaces for retention of food particles. Irregular position of individual teeth may also help in forming places for lodgement. According to Black's investigations we find that there is practically no difference between so-called hard and soft teeth in regard to the quantity of lime salts, the molecular arrangement of the calcium deposits in the matrix of the tooth is *the* factor. The color of the teeth, which is an optical result of crystalization, is only of indirect value; the denser the adhesion of enamel molecules, the more shiny the surface, the greater the resistant power.

The question of vitality of dentin as a factor in the process of caries is the fulcrum of the followers of the theory of inflammation. Dentin has no circulation and no connective tissue fibres, the two fundamental principles for a support of this theory. The only source of vitality in dentin is traceable to Tome's fibres and

Neumann's sheaths. But very lately Dr. Roemer has been able to demonstrate without doubt for the first time non-medulated nerve-fibres in dentin, and these nerve-fibres are found to be strictly identical with what has been regarded till now as two different structures, namely, the above mentioned Tome's fibres and Neumann's sheaths. These fibres radiate from the coruna of the pulp towards the junction of the enamel and dentin, ending in club-shaped end-organs which help to explain the increased sensitiveness in those particular regions. A direct formative action in the dentin proper is excluded. Secondary dentin may be formed in the pulp chamber as a result from irritation upon the odontoblasts. The prolongations of the odontoblasts are the linings of the dental tubuli. The transparent zone which is a distinct feature of carious dentin in live teeth, owes its peculiarity probably to the same origin which causes the transparency of senile dentin.

The surroundings of the teeth as predisposing factors of caries are of marked importance. As stated above, our daily food, more so the carbohydrates, furnish an abundance of pabulum for the growth of micro-organisms. The physical conditions of the food-material, viz: hardness, grit and acidity, may exercise their deleterious influence upon the enamel. The secretions of the mouth have been looked upon suspiciously. Chemical analysis of normal saliva does not point to anything which might be dangerous to the teeth; per contra, we believe it possesses some anti-bacterial power which manifests itself; in fact, that those teeth which are constantly bathed in this fluid, are practically free from caries. This is not due to its mechanical cleansing, but we know that lesions of the oral cavity heal very quickly in spite of being an incubator for micro-organisms.

Amongst practitioners we find an almost general preconception in regard to predisposition of caries during pregnancy. To Dr. Bird, of Budapest, is due the credit of substantially ratifying this dogmatic presumption. From a large series of statistical examinations of non-mothers and mothers, having been married one or more times, he arrives at the surprising conclusion that pregnancy and caries are in no direct relationship whatever and that pregnancy does not exercise a favorable influence upon the occurrence of this disease. It seems so very plausible that during gestation the lime salts which are needed for constructing the

osseous system of the foetus are resorbed from the teeth. But why nature should pursue such a course, was never explained. Would it not be simpler to assimilate a greater percentage of the lime salts which our daily food furnishes? Even the plainest table supply contains enough calcium to satisfy the wants of mother and child. If there should be an increased need for an organic material, the bones of the body will have to suffer the loss; a process of resorption goes hand in hand with inflammation, which may occur in bone, but never in teeth. Hyperemesis, during gestation, has probably certain bearings on the rapidity of the carious process, but this depends on various circumstances.

Besides the above-named factors as predisposing causes of dental caries, there are a variety of unknown forces, as for instance, chemical changes within the cells of the individual in certain periods of life, viz: the climacteric age of the female which may cause a sudden destruction of a perfect denture which has escaped the disease for two or three deceniums. The last score of years has brought much light upon hitherto unknown fields of scientific dentistry. Still many of the conditions in regard to cause and predisposition of caries are at present veiled in obscurity, and I beg to close my few remarks with a sentiment chosen from the pen of the genial Dr. Williams:

"These fluctuations in decay of the teeth which we have so long observed are due not to changes in tooth-structure, an hypothesis which could never be held for a moment by those who understand how slow the changes in dentin are and how impossible any true physiological change in enamel must be, but to changing conditions of the environment of those micro-organisms which constitute the sole exciting cause of dental caries."

The Dentist in His Office.*

BY DR. N. B. ACHESON, YOUNGSTOWN, OHIO.

Now as the thinker has seemed to be conventionally accepted as the real man or ego, it will be natural to expect a flood of criticisms, when the position is taken that the thinker or mind is but

*Read before the Northern Ohio Dental Society, May, 1899.

a principle which the real man uses in trying to gain a knowledge of truth, and even that it is not the only principle, but that there is another still more silent and unrecognized, but vastly higher, which is used in proportion as he evolves into higher self-consciousness.

In many, the principle of intuition is very weak, and in some is entirely wanting. It is this principle which our consciousness uses to grasp knowledge, to seize hold of truth, and thus to know it, without depending upon the tedious mental effort of the mind; for the mind works with the ratiocinative deductions, and is never sure of its ground, or its conclusions, but when the consciousness is trained to work through the intuition, knowledge is swift and sure, and is accompanied by a conviction that satisfies us without proof.

Regarding our professional conduct, it appears from observation, that the dentist is afflicted with the same mental condition that is all too prevalent among mankind in all vocations, that is, each acts as though he felt that the earth was made for him alone. Each one enters into all manner of schemes to draw all trade to himself. The members of the dental profession plainly exhibit the symptoms of the all too prevalent malady; each one seems joyous when he has accomplished a shrewd turn. He soon finds that others can do the same, and is depressed and angry whenever a patient is lost. Thus in the practice of our profession we are seeking the lower plane of conventional shrewdness in finances, rather than the lofty one of professional ability to serve our patrons well.

What are we to learn from this unfortunate condition? Let us question the intuition and we shall receive a (very common sense but) true answer, to the effect that everyone has just as good a right to follow his chosen occupation, enjoy himself and make others happy as we have; and instead of getting angry at the encroachments of others within our pre-empted territory, we should be glad that they are finding work to do, even though we have to do a little less; that we should try to feel that each one honestly, to the best of his ability trying to help humanity.

We are prone to speak evil of others, when, if we would but realize that the powers that be are the ones to judge and met out rewards as punishments, we would be more content to attend to our own affairs, put away selfishness, and strive to do our work

for the comfort of our patients, with the sure, intuitive feeling, that the same Great Law will recognize us as one of Nature's helpers, and will make obeisance by furnishing us with what is really necessary to live upon. It is just as easy after a little practice to be cheerful and never speak ill of others as it is to try to belittle them, and try to make possible patients feel that we are "the only pebble on the beach." It took me a long time to learn this lesson, but I am happy to say that I hold no ill feeling towards anyone, living or dead. If we will but let the intuition do its perfect work, we will perceive the truth, and acting accordingly, we will become contented and cheerful; we will not be thinking how much we can charge for this or that piece of work, but will strive for the comfort of the patient; we will try to become a blessing instead of a curse to humanity; we will keep our offices, cuspidors, instruments and persons clean, with the result of better work, satisfied and contented patients.

Selfishness, greedy or licentious thoughts are not conducive to good work, and further, no one should delude himself with the notion that his thoughts are not felt by others; for every thought is a thing, just as much as a fish-horn is a thing, and there are some people whose intuition is so far developed, that others thoughts are just as much in evidence to them as a noisy fish-horn would be. So the operator's evil thoughts are sure to reflect their condition into the patients feelings, and will make him very uncomfortable, even though his intuition may be so slight that he may not recognize the source of the discomfort. The effects upon the patient will show themselves after a few experiences by forcing within his consciousness the recognition that he feels uncomfortable every time he meets, or even thinks of that dentist and he will gradually form a dislike for him.

If the above is true, then the opposite is also true, and thus we may know that by kind thoughts, pure desires and acts, we may become a blessing, and strew sunshine and happiness wherever we go; also, we can have the assurance that our work done under the moral sunshine will be far more satisfactory, than when done under the cloud of selfishness.

The physician, whose heart is filled with the milk of human kindness, is not apt to harbor selfish or immoral thoughts, when prescribing for his patients. His one wish is to bring health and happiness to take the place of misery. Such a physician seems to

inspire his medicines to do extra good work, and if he has the secret knowledge, he will always try to compound and handle the remedies he prescribes.

I am well aware that these ideas will seem strange and even startling to those who have been traveling in the orthodox groove or rut of conventional thought, yet, "there are greater things twixt Heaven and Earth, than are dreamed of in your philosophy, Horatio," and there are many of you who will live to see the accepted idea that matter can be dead and unconscious, give way to the knowledge that all matter is embodied consciousness; that consciousness is only intelligence graded to the plane upon which it seems, to our senses, to be matter. How could matter obey the laws of nature, if it did not have the intelligence to do it? The X-ray certainly gives us a hint that matter is not what it seems to us to be. All vegetation grows out of apparently inert substances, and may be again reduced to the same, only to again persist in coming forth into vegetation under proper circumstances.

The Great Law must be controlled by superior intelligence, and I verily believe that if mankind transgressed no law, there would be no suffering. The fact that a cause will produce an effect ought to prove that perfect consciousness directs the law, and if so, must do it through the consciousness of every atom in the universe.

Taking atomic consciousness to be a fact, we can more readily understand that the conscious I forms bodily habits by educating the tastes and desires of the atoms composing the body, and the man who harbors thoughts of personal gain, will in time become intensely greedy, grasping, and perhaps a thief. This condition, now reacting upon his thoughts, unfits him to do good work, which may come to him seeking the benefit of his professional service, and he will some day certainly awaken to the fact that the profession has left him a long way in the rear. On the other hand, if one allows only thoughts of useful service to find lodgment within him, his whole being will in time become saturated with a divine love that will cause him to be careful of the smallest details of his work. This saturation will react upon his conscious I like a guardian angel, and in proportion as he unselfishly serves humanity, the Powers that be will open to his intuitive perception the knowledge of the Truth.

The desire to serve others makes him a better workman; the

desire to make others happy makes him contented with his position in life. Contentment is what all are striving for, though it is unfortunately true that too many take the wrong path to reach it.

President's Address.*

BY L. P. BETHEL, D.D.S., M.D., KENT, OHIO.

Although the oldest living dental society, the Northern Ohio is by no means an antiquated organization. It is in the prime of life, up to date, and ever advancing. Each meeting gives evidence of its usefulness, and it has had a remarkable career.

It was the outgrowth of a former society, the Northern Ohio Dental Convention that had an existence of a few years only. In 1859 the Northern Ohio Dental Association was organized, and among its charter members appear the names of Drs. C. R. Butler, Corydon Palmer, J. F. Siddall, Wm. H. Atkinson, B. Strickland, B. F. Robinson, H. P. Huntington, B. T. Spelman, F. S. Slosson, J. C. Whinery, S. E. Lyman and others.

Of these, Drs. C. R. Butler, Corydon Palmer and J. F. Siddall are still active members. Of the early history we have but fragments to hand down to the coming generation, for the records up to 1872 were lost. I say "lost," because they mysteriously disappeared and have never been returned to the society. If lost by some secretary in whose care they had been entrusted, he deserves the severest censure. If maliciously hidden or destroyed by other persons, no punishment is too severe for so despicable an act. This is the one dark blot on the history of the society, and if there is anyone living who can search out and return the lost records, he will be not only justly rewarded, but will remove the stigma now attached, perhaps, to the names of innocent persons.

But in spite of this dastardly attempt to wipe out of existence all traces of the society's record, we have a record still. Perhaps not so complete, yet comprising enough to show somewhat the progress of the society from its inception. By a diligent search through volumes of old dental journals, the names of all the presidents and many of the other officers have been found during the

*Read before the Northern Ohio Dental Society, May, 1899.

past year and other data obtained from various sources, all of which have been duly inscribed by our Cor. Secy. in the individual record book, presented to the society a year ago by Dr. Henry Barnes, thus making a permanent record. From the record we learn that Dr. B. Strickland was the first president, serving until and including the year 1865. The following presidents were: F. S. Slosson, '66; C. R. Butler, '67; B. F. Robinson, '68; W. P. Horton, '69; F. S. Whistlar, '70; J. E. Robinson, '71; E. J. Way, '72; B. F. Robinson, '73; S. P. Hildreth, '74; E. J. Way, '75-'76; J. F. Siddall, '77; J. W. Lyder, '78-'79-'80; Chas. Buffett, '81-'82; Gale French, '83-'84; Ira W. Brown, '85; D. Gibbons, '86; J. R. Bell, '87; G. H. Wilson, '88; H. F. Harvey, '89; J. Stephan, Sr., '90; F. S. Whitslar, '91; J. F. Siddall, '92; W. H. Whitslar, '93; S. B. Dewey, '94; Henry Barnes, '95-'96; J. F. Dougherty, '97; L. P. Bethel, '98-'99.

The Northern Ohio is looked upon as a model dental society. It never has been hampered by factions, as are too many dental societies. Its members are earnest workers and progressive dentists who stand shoulder to shoulder in a united effort to advance; and in union we find strength.

Jealousy and envy, ever a bar to progress, find no place here and let us hope they never will. The young men are encouraged and not discouraged. We might today number our society members by the thousands instead of by the hundreds were this policy equally carried out by other dental societies throughout the United States. But there are too many men who think *self* stands alone supreme, and no one has a right to question their opinions.

But, on the other hand, we see these monarchs setting forth their opinions in society meetings to prejudice members against any and everything contrary to their own ideas, whether it be plausible theories, or facts obtained through long and careful investigation.

With such opposition constantly confronting the young men in dentistry, what inducements have they to join dental societies, much more to spend time and money in investigation only to have the result set aside by mere opinions that are looked upon as infallible by the followers of these so called sages. I believe I am safe in saying that such men have done more than any other one thing to retard the progress of our profession.

How often in society meetings have we thought of the story

of the modest yet rising young artist, who, to find out how much talent he really possessed, drew a picture of a bird and hung it in a frequented art gallery. Underneath the picture he inscribed: "He who thinks he can do better than this, draw a line across the picture." Within two days the picture was defaced. The young man discouraged, went to his father. "Never mind, my son," said he, "draw another, and change your inscription to read thus:" "He who thinks he can do better than this, let him prove it by a drawing of his own." This was done, and the picture afterwards remained alone.

So it is facts and proof that we want in our society discussions. Mere opinions are often worthless. We have no right to condemn methods or the results of research until we have ourselves proven them faulty. And when a young man engages in any special line of investigation he should be assisted. How much more would he accomplish for the betterment and advancement of dentistry if, when any man sets forth his investigations, others instead of criticising and setting mere opinions against these results, would unite in an unbiased investigation along the same lines to prove or disprove them.

Let the N. O. have this record. We have among its members, men eminently qualified to carry on original search work, and the society ought to have the benefits of such investigation.

It seems to be an almost universal opinion that a dental society cannot exist without annual dues, but show me a more prosperous or generous society than our own. The Northern Ohio society has never exacted annual dues, yet always has cash in its treasury. For this we owe a debt of gratitude to our officers, especially to corresponding and recording secretaries who have worked faithfully these many years without other compensation than to see the society steadily advance. And another surprising thing is the fact that never, since the famous rubber suits, has it been necessary to make an assessment on its members until last June, when a one dollar assessment was made to reimburse the treasury after the generous donation of \$100 by the society towards the expense of the Tri-State meeting at Put-in-Bay. Few societies can show such a record.

It is customary for the president to suggest ideas to the executive committee to advance the work of the society, but our executive committee is so efficient, and its work shows such ad-

vanced ideas I am sure I have nothing further to suggest at this time. I will, however, remind the members here of the next meeting of the National Dental Association at Niagara Falls in August. It promises to be one of the best meetings ever held in the United States, and I hope we shall have a good representation from the Northern Ohio.

And now, with these few words, I leave the meeting in your hands. The program prepared is a most excellent one, and it remains for the members to carry it out successfully.

Odontological Society of Cincinnati.

PROCEEDINGS of regular monthly meeting, Friday, April 28, 1899. A paper was read by the essayist of the evening, viz :

The Teeth in Evolution.

BY DR. A. J. MARKLEY, CINCINNATI.

THE subject which I have chosen for this evening may seem somewhat unsuited for practical discussion, and it is not without considerable trepidation that I have ventured to enter upon this broad field, but wanting the long experience which alone makes practical observations valuable, my choice lay only among those questions dealing with theory and no point of theory is more interesting or more widely discussed than that of evolution.

So I trust you may find something of interest in the attempt which I shall make to show how far down the scale of animal life the fundamental idea of the tooth found place, and how the highly organized and structurally beautiful organs with which we deal in our daily work, have evolved through a long course of time and change from the simplest and most primitive types. How they have been shifted from part to part of the oral cavity, how they have served here as a weapon of defence or attack there as an instrument of husbandry, how there has been a constant progression in form and structure, from the simple calcareous spine of the lower organisms, to the mammal tooth with its many functions and intricate organization.

I have tried very hard to prove to my own satisfaction that an unbroken line of dental evolution might be traced from the

one-celled animal up through invertebrate life, but while undoubted examples may be found the steps are uncertain and often far apart, and it is not until the vertebrate characteristics become established that we may follow unerringly the course of development of these most important organs. We will, however, pass rapidly over the domain of invertebrate life and note the interesting and very primitive examples of teeth found there, and assure ourselves that these are truly the proto-types of the dental organ as are their possessors the proto-types of animal life in general.

Many of that low class of organisms known as entozoa which infest the intestinal tract of other animals and subsist by the absorption of the fluids found there, have the head or lips armed with curved spines or hooks and by means of these retain their place on the mucous walls.

In the order Polypi the tentacles or arms by means of which the food is conveyed to the mouth are provided with these same spines. The family of snails have the tongue and several rows of rasping teeth, the mouth of the leech is provided with three semi-circular jaws, each armed with about sixty sharp teeth. One of the echinoderms, the common sea urchin has a very peculiar dental apparatus, consisting of five calcareous prisms pointed at one end, the approximated sides bound by muscular bands, the sharp edges thus brought together form quite an incisive instrument. This, I believe, about represents the forms of teeth to be found in the division of invertebrates.

We next pass to the Vertebrates, noting that the lowest forms have only a simple oral cavity, no jaws and therefore no teeth.

The class of fishes being the lowest of the vertebrates presents the first and simplest type of the tooth. Nature has evidently used the fishes as an experimental laboratory in the way of teeth, for in this class we find a most astonishing profusion of number, an endless variety of forms, every possible method of attachment and only in structure is there any limit.

As regards number we find it varying from the single tooth on the roof of the mouth and two serrated plates on the tongue up through four, six to almost countless numbers. "With respect to form as organized beings ascend in the scale of animal life, so their parts progressively deviate from geometrical figures, it is only therefore, in the lowest vertebrate classes that we find teeth

in the form of perfect cubes and of prisms and plates with three, four, five, six sides.

The cone is the arch-type of the vertebrate tooth, and the most common form in fishes, this is modified into the many forms to be found in the class.

These cones may be long and slender, they may bifurcate at their free extremities, they may end in three diverging points, the cone may be flattened and curved into a trenchant blade, by a gradual process of blunting, flattening and expansion of the apex, the cone is modified into the short thick cylinder, for grinding or crushing. Here begins the evolution of the molar tooth. The smooth, flat or convex end of the cylinder soon becomes serrated then set with lobes or cusps.

A progressive increase of the transverse over the vertical diameter may be traced until the cylindrical form is exchanged for that of the flattened plate, and these plates present in many forms, circular, oval, elliptical, semi-lunar, oblong, square, and have their grinding surfaces variously marked and serrated.

With respect to situation of the teeth, the fishes stand alone among vertebrates, not only are the jaws set with teeth, but the tongue, the roof of the mouth, the nasal bones, the vomer, the pharyngeal bones, the palatines, and the lips are brought into use and obliged to play an unwonted part in this experiment; nor is the mode less varied than the place of attachment. We may trace here a progression from the simple ligamentous attachment, through the various forms of ankylosis. Here the teeth are set in little pedicles of the bone, then jointed to it by ligamentous bands, there we find a direct union of the tooth to the bone, here the teeth are set in a longitudinal groove and sutured one to the other, and finally in the higher forms we find the individual socket and the tooth ankylosed therein.

In structure only has the attempt to complete the evolution of the tooth in the class of fishes failed, their substance varies through the different kinds of dentine, and only in a few instances is an enamel covering developed, the pulp is formative only and is usually obliterated after the tooth has attained its size.

We may note that the process of development is arrested at each of the well marked stages through which the development of the mammalian tooth passes. In all fishes the first stage is the production of a soft vascular papilla from the free surface of

the buccal membrane, this papilla is converted into dental tissue, and attached to the jaw as a completed tooth, this represents the transitory papillary stage of the mammal tooth. In like manner is represented the follicular and the eruptive stages. With but few exceptions the teeth of fishes are shed and renewed not only once but many times during the course of their lives, this endless succession and decadence of the teeth, together with the vast numbers in which they are found in the same individual, is illustrative of the law of vegetable repetition as it manifests itself on the first introduction of a new organ into the animal kingdom. The transition from the class of fishes to the class of reptiles is well marked, the connecting forms being easily demonstrated, therefore our ascending scale of tooth forms is unbroken. The advance however toward the mammalian type is not very great in this class, the chief progress made is the accentuating or establishing of some of the characteristics acquired in the preceding class.

In no instance does the number of teeth reach so great a height as in many fishes, still the number is so rarely fixed as to become characteristic of the species. As a general rule the teeth of reptiles are ankylosed to the bone which supports them and the manner of attachment in general is similar to that found in fishes, varying through the different modes of ankylosis to the margin of the jaw, until finally the dental groove is divided by complete partitions and each tooth is set in a separate socket.

The conical form is here the prevailing type owing to the food habits of the class, most reptiles seizing their food and swallowing it without mastication. Some considerable advance is made toward the mammalian molar type, as we find many teeth with cusped crowns and constricted necks, and in an extinct crocodilian reptile the mammalian division into incisors, cuspids and molars was closely simulated, although no reptile has the base of the tooth divided into fangs.

In the lower forms the pulp is formative only and is soon obliterated, but in the more highly organized reptiles we find a permanent vascular pulp. In no reptilian tooth is the process of development ever arrested at the first or papillary stage, the formative pulp sinking into a follicle and becoming encapsuled, adds one more stage to the simple process in the fishes. As in the fishes we find here an endless decadence and succession of old and new teeth.

We must note two most interesting digressions from the class of reptiles, where, instead of progress we find a retrogression, both in form and number of the teeth and a final elimination. The first of these takes place within the class and leads to the order chelonia, to which turtles and tortoises belong, these reptiles are all edentulous, but their origin from the dentigerous orders is shown by the existence both fossil and living of species combining the horny trenchant sheath covering the jaws with true teeth.

The other furnishes us with an explanation of the origin of birds, numerous fossil remains having been found which prove without doubt that this class took their origin in the class of reptiles. These early birds so nearly allied to the reptiles were provided with lizard tails, feathered bodies and wings and long jaws armed with long conical teeth.

The transition from the class of cold blooded oviparous reptiles to the class of warm-blooded viviparous mammals is less easily demonstrated than the others of which I spoke, the transitional forms have of course been long extinct, and some considerable difficulty has been experienced in distinguishing between the fossil remains of the nearly allied reptiles and mammals, still the results of the last few years' work in this direction leaves no doubt in the minds of those interested.

It is not my intention to enter upon any extensive description of mammal tooth that has been done many times and you all know the results, so I shall make only a brief outline of the subject.

In this class we find that the number of teeth becomes constant and characterises the species, although the typical number is fourty-four it may rise much higher as in the dolphins where it reaches one hundred and ninety.

Here the teeth are confined to the maxillary and mandibular bones and the division into incisors, cuspids and molars is general. The base or implanted portion is bifurcated and pointed at the apex. The pulp becomes permanent and nutritive and there are three well marked stages of development. The tooth here becomes a fixed organ, being renewed only once to meet the change in size of the growing animal, and in several orders only one set is generated.

It has, of course, been impossible within the limits of one

paper to do anything like justice to this subject, and my only attempt has been to set forth very briefly the grounds for the belief that no organized being was created as it exists, uninfluenced by the long train of animal life which went before. Evolution can not be satisfactorily proved by any other method than that of comparative embryology and the key-stone of the whole theory may be found in the statement that "The ontogenetic development or the development of the individual is an epitome of the phylogenetic development or the development of the kind or tribe."

So in the development of the human tooth may be traced the whole history of teeth from the primitive cone-shaped spine of the lower fishes, until it ends in human mouth.

DISCUSSION.

DR. J. S. CASSIDY: In considering the paper the first difficulty which presents itself to me is, that so far as my knowledge goes, I am not aware of what the accepted theory is of evolution at this time. Is it that all human beings have descended from some primordial cell, elementary in its nature, the lowest possible form of life, vegetable or animal; or is it that a certain genus of life will assume new forms and new organs as they are needed, according to the environment? I think Darwin did not introduce the theory that all forms of life came from the lowest possible form; and I think that mathematicians have proven the age of the earth, or conditions of the earth suitable for life to exist upon it, not to have been long enough for all these changes to occur from the very lowest possible form of life up to man. I would like to know what is the present accepted theory among scientific men on that subject. For my part, I hardly think it possible that we have descended, or ascended, from the lowest form of life; and when we study the evolution of the teeth, from a low form of life such as the sea-urchin up to man, how long a period, how many cycles of time would it not require for such a low form of life to evolve into a man?

DR. MARKLEY: I agree with Dr. Cassidy when he says he don't believe that Darwin held any such views as he mentioned. I draw my own opinions mostly from Haeckel, who, although he was a student of Darwin, went, I think, a little bit farther. The popularly accepted theory of Darwin to-day is just the one that

Dr. Cassidy was apparently disposed to doubt; that if there is any ground for a belief in evolution, it must take its origin from the lowest form of life. If we don't accept evolution in that view we must believe in special creation; and that is directly opposed to all the axioms of science, to say the least.

Now, as to what evolution itself is: evolution, I think, would be primarily a development; I don't think a retrogression; although any change upon a form that went before would be evolution, whatever the result might be, whether retrogression, or progression.

As to the mathematical computation of the age of the earth, I am very much disposed to take issue with Dr. Cassidy upon that subject. The latest expression as to the question of time is that man himself has been upon the earth from fifty to one hundred thousand years. Our biblical account allows something like five thousand years for the age of man; but geological records have proven, within the last year or two at least, that fifty thousand years is the very shortest time allowed for the evolution of man; and scientists are disposed to place it at a hundred thousand.

DR. J. S. CASSIDY: You mean from the beginning of the very lowest form of life?

DR. A. J. MARKLEY: No, I mean the presence of man himself; in his present perfected state he has been upon the earth from fifty to one hundred thousand years. One historian says the records of historical man are but as a day, compared with the unwritten records of man before history, pre-historic man, during the dark ages of the time when he was evolving from the lower types. Now, there is one question I should like to speak of especially. A great many people accuse Darwin of very clearly saying that man has evolved from a monkey; Darwin never did say that. Darwin was a most devout man himself, and would have been very much disposed to believe in special creation if his sense would have allowed him to do so. He only says, however, that man and the ape tribe are simply parallel lines of development.

DR. J. S. CASSIDY: Different genus?

DR. A. J. MARKLEY: Different genus; and they must have sprung from some common ancestry; he is not disposed to say what that is.

DR. H. A. SMITH: I was very much pleased with the paper ; but was somewhat disappointed that the author did not go into the evolution of teeth in the vertebrata, and compare the teeth of the higher ape with that of man ; he might do that at another time ; that would bring it down to perhaps something more practical. We are all seeking practical things. I was struck by a remark made by a member present when Dr. Williams read that classic paper of his before the New York Odontological Society last year, upon the development of the enamel, and all that. The member said : " Well, can we fill teeth any better for all this to-morrow ? " It was cruel to ask such a question. Yes, they could fill teeth better,—not to-morrow, perhaps,—but certainly in the long run, by listening to such a paper as that of Dr. Williams ; and so we can fill teeth better in the long run if we understand the evolution of teeth.

Coming now to the question of difference between the teeth of man and that of the ape ; Dr. Markley has stated that no doubt there were some striking differences, not in numbers ; and that I need not go into except to say that there are some striking differences, that the molars in all of the ape family increase in size from the first to the last ; in man they diminish in size from the first molar to the last ; not only that, but the pre-molars, or bicuspid, have bifurcated roots ; while in man it is anomalous when we have bifurcated roots in the bicuspid. Another striking difference between the ape and man is that in the ape the cuspid are more largely developed ; in man the cuspid teeth are upon a level with the other teeth in the mouth, no one tooth being particularly longer than any other. In the higher form of ape another striking difference is, that they have spaces between the lateral incisor and the superior cuspid, called the diastema, into which the inferior cuspid passes. Another peculiarity of the teeth of man as compared with the ape, the lateral incisors are narrower as compared with the central.

I have now mentioned the striking differences between the ape and man not in number, not in the relation of the teeth, except that the jaw is more square ; it is more of a parallelogram ; it is box like or square in the ape ; whereas in man it has a beautiful curve.

Now, a practical point to help us in saving teeth, at least by filling ; why is it that we have smaller teeth than are found in

the ape? Why is it that we occasionally find a diminished number of teeth; for example, a lateral incisor or third molar missing in man? Is that an evolution? Is that a retrogression? My idea has been evolution, that it is an improvement in the direction of higher development; therefore, I think in respect to losing teeth, that in another five hundred thousand years man will not have the lateral incisor, nor the third molars. And we might go further on that line, and conclude that he would not have any teeth at all. So if the young lose their permanent teeth, and later marry, their progeny might be expected, if this was repeated through generations to become edentulous. But that will not occur in our day! I want to bring this down to something that benefits to-morrow, if we can. If these teeth were left out which I have mentioned,—the lateral incisors and third molars,—the other teeth would have more room; and therefore would more easily decay. Teeth don't decay simply because they are placed in juxtaposition; because that is their normal relation. The vital question for us is this: in this process of evolution from the teeth characteristic of the ape, on down to man, have the teeth deteriorated in quality? Is the dentin as good, and the enamel as good, and the resistance to caries as good as in the ape?

There is no doubt but that those people who live out of doors and pursue a nomadic life have better teeth, as well as better physical development otherwise; therefore, with them caries is not known, or if known, not to any extent, is the large prevalence of caries of teeth due to the fact that there a deterioration in the quality of the teeth? They have changed, you say, in numbers; they have changed in the shape and number of cusps; especially in the lower teeth. Will the future dentist have a smaller number of teeth, and be able to save teeth by filling alone? I hold not; because the teeth have been in contact in the ape, and in the lower order of man; so if decay is absent in those orders, it is not because they have this greater space. If the tissues of the teeth deteriorate in this evolutionary process, it must be by effect upon the enamel; because caries always begins on the surface. Now, that is the question, I think; is the universal prevalence of caries due to defective tissue, to defective enamel, to defective dentin? My opinion is, that these factors are not sufficient to account for the prevalence of caries to-day; it is the environment

of the teeth largely; and unless we have proper environment for the teeth, the dentist is almost a failure.

If you will allow me to suggest some good reading, would say that you will find in the *Cosmos* of last year a series of papers by Mr. Ward, of Rochester, who is known as a scientist, especially in the direction of zoology; and who makes all those beautiful collections in comparative zoology. Now, in his papers beginning early in the year,—there are two of them,—he takes up this subject somewhat, from a scientific stand-point. I don't know whether it is he, but one author says, that an organization which does not need teeth doesn't have them; so with the first forms of life, as for example the fishes which inhabit the shoal waters of the first seas, they had no teeth, because they did not need them; and as the need for teeth are developed, they appear; they are developed through use, modified by food habit, determining their shape, number, etc.

The tooth form that he mentioned, the pointed teeth such as fishes have, once prevailed almost universally; and it was the type of all teeth. In the process of evolution through environment, according to that theory the teeth have been changed and adapted to the work they are to do. Now, carried a little further, will the coming man be edentulous? What is the use of teeth to man, if he lives on spring chicken and spring lamb, and nutritious extracts from food? He would not need teeth at all; and therefore they would go out of existence. It is the need of use that causes the development of an organ.

DR. FRANK A. HUNTER: In the very excellent paper that Dr. Markley has given us, we certainly have a chunk that we are hardly able to masticate! Ordinarily the less we know upon any given subject, the more we can talk about it; but in this case the field has been covered so completely that it is difficult to add anything which is pertinent. In regard to evolution, I don't know really if I ever was "evolved." I sort of have an impression that like Topsy I just "grew!" In reply to what Dr. Smith has said of the edentulous man, if he means to imply that man is deteriorating physically, I doubt that very much. I think man physically to day is superior to what he was at any time of his existence. He lives longer as a rule.

DR. H. A. SMITH: Dr. Markley has suggested an inquiry in reference to the size of the third molar; he has been examining

skulls at the museum, and makes the statement that the third molar is quite as large in those skulls as the first or second molar. Now, from our clinical observation and all we see in the chair, I think it is pretty apparent at the present time that the third molars have diminished in size very materially, so that they are very defective, very rudimentary. That brings up the question as to why the jaw of man is growing smaller. It is thought that it is growing smaller, and that therefore the teeth must be diminished because not exercised; whether that is true or not—and right here let me say that I am speaking, not from positive knowledge of my own, but only from suggestions derived from others; but if the jaw of man is shortened very materially, and the attachment ridges of the muscles as shown by the superciliary ridge are very much diminished in size, it must be through the fact that mastication is not being practiced as it was in prehistoric times; therefore, the jaws are growing smaller in man; therefore the number of teeth are being diminished, as they are not needed. That is evolution, as I understand it. Whenever an organ is not used through a series of ages, a long period of time, it goes out of existence or becomes merely rudimentary, perhaps entirely obliterated; just as the lateral incisors and third molar are supposed to be rudimentary.

A Monthly Summary from Our Foreign Exchanges.

Translated expressly for the OHIO DENTAL JOURNAL.

By H. PRINZ, D.D.S.

ODONTALGIA RESULTING FROM INFLUENZA.

(By H. Lezer-Lorez, Paris, France).

DURING the re appearance of the influenza in the last winter months (1897-'98), I had occasion to see a number of peculiar cases of severe toothache, of which the following is a short history:

(1). Mrs. V., 33 years old, had intense pain near the first upper right bicuspid. The patient demanded extraction of both teeth. A thorough examination did not justify such a procedure;

there was no sign of anomaly of the structure, no caries, etc. The gingiva was slightly reddened but not swollen. To give the patient relief, I tried painting with iodine, cauterization with chromic acid, the active cauter, etc, with no results. Large doses of antipyrine overcame the pain in five days with no relapse.

(2). Mrs. L., 43 years old, complained about pain, which occurred regularly every evening at 5 o'clock and lasted till midnight. The pain was located near the second superior molar. An examination of the mouth showed that all the teeth were in perfect order, even the wisdom teeth were fully erupted. The external appearance of the teeth did not reveal anything to help in diagnosing the case; the gingiva was slightly reddened, beginning near the margin of the gum and lessening towards the apices of the roots where the pulsating blood can be felt. As this case seemed to be similar to the first one, I inquired into the history of the patient and found that she had passed through an infection of influenza which made her stay in bed for about seven weeks. Without paying much attention to this statement I prescribed antipyrine in one gramme doses and iodine vapors (?) During the treatment, which lasted ten days, I had occasion to see my first patient again and found that she also had suffered from influenza which was followed by the toothache. The celebrated specialist, Dr. Motel-Lavalée, who has published quite a number of essays on influenza and to whom I communicated my experiences, was not at all astonished about my statements in regard to toothache in connection with influenza and he fully approved of my mode of treatment.

(3). Messrs. V. and two members of the same family, complained about severe pain in the upper left maxilla. From one of these gentlemen I removed a small root from the second upper left bicuspid and from his relative a remnant of the upper wisdom tooth on the same side. This small operation was of no benefit to either one of the two and after three days they returned. One of them wanted to have the upper first bicuspid and the other the first molar of the same side extracted. Nothing could be found about the teeth which would indicate any disturbance, and on close questioning, I revealed the fact that both patients had suffered from influenza, with affections of the nose, eyes, intermittent fever, etc. Very soon severe toothache followed. I was convinced that the pain in the maxillary bone

resulted from the influenza and prescribed large doses of salicyle. I was right. Inside of twenty-four hours all difficulties subsided.

(4). Mrs. J., 28 years old, about a week ago, had the sound left upper second bicuspid extracted as the probable cause of very severe toothache. This did not give her a moments rest. She demanded the extraction of the other bicuspid. I refused to do this as the tooth was sound. The patient seemed to be anemic and I inquired into her history. About two months ago she took sick with a severe cold, cough, pain in the side, etc. About the teeth, on the affected side, the gums were much inflamed. Believing that the teeth were the cause of the pain, she had the bicuspid removed, but with no relief whatever. I ordered small doses of salicylate of soda. In seven hours all the pain had left her and did not return.

(5). Mrs. C., 54 years old, complained about pain coming from the upper right cuspid. An examination of the teeth did not reveal anything abnormal. The lady told me she went through a severe spell of influenza about four weeks ago and since then suffered from severe toothache. As this was one of a similar case as stated, I gave her small doses of salicyle and in from sixteen to eighteen hours she was fully recovered.

In all cases I showed that the pain was not a true toothache, but an affection which was seated in the upper maxillary bone. There was no formation of pus on loosening of the teeth; only a slight redness of the gum, swelling, and weak pulsation near the affected organ.—*Wiener-Zahn. M. Sch.*

THE USE OF CHINOSOL IN DENTISTRY.

Dr. Hirschbruch, of Berlin, laudably recommends the use of chinisol in necrotic, but not infected pulpitis. After the cavity is excavated under aseptic caution, the crown pulp is removed, the cavity washed out with ether, and a small piece of a tablet of chinisol introduced and rubbed over the floor of the cavity. Over this is placed a small piece of tin-foil and the cavity is permanently filled. This method of treatment which I have been using now over a year, has given entire satisfaction except in one case, but some other circumstance was the fault there. Pain, as a result of periostitis, was never experienced. The great advantage of the treatment with chinisol lies in the fact that it will not discolor the tooth. Chinisol and iron salts form black combina-

tions which, however, will not restrain the effect of the drug.—
Wiener-Zahn. M. Sch.

LOCAL ANESTHESIA WITH ORTHOFORM.

Dr. Bonnard, of Paris, has used the following solutions for subgingival injections :

No. 1—Neutral orthoform,	-	-	-	-	25 parts.
Glycerin,	-	-	-	-	5 “
No. 2—Neutral orthoform,	-	-	-	-	50 “
Alcohol,	-	-	-	-	3 “
Distilled water,	-	-	-	-	7 “
No. 3—Neutral orthoform,	-	-	-	-	10 “
Orthoform—choral hydrate,	-	-	-	-	10 “
Distilled water,	-	-	-	-	4 “

Nos. 1 and 2 are not well suited for dental work. No. 1 crystalizes and clogs the syringe and No. 2 causes prolonged burning pain. No. 3 fulfills all the requirements of a good local anesthetic, can be used in larger doses and the anesthetic effect is much longer than in cocain. He never had any bad results. In one out of twenty-five cases he noticed sloughing of the gums. He advises to inject very near the gingival line on both surfaces and to extract five minutes after. There is little hemorrhage and pain.—*Dr. Bonnard, D. M. f. Z.*

The National Association of Dental Faculties and The National Association of Dental Examiners.

THE members of the dental profession will be glad to learn that the differences existing for some years between the National Association of Dental Faculties and the National Association of Dental Examiners have been reconciled. These differences have been the cause of much friction between the two bodies.

The cause of the trouble was the refusal of the colleges to accept and the adherence of the latter body to various rules which have crystallized into what is known as Rule 8 of its code of rules, Sections 1 and 2 of the Examiners' Association, because the colleges were not consulted in its framing.

The attempted enforcement of this rule recently led to litigation in the State of Wisconsin. The State Board of Dental Examiners of that State refused to admit to registration the diplomas of the Chicago College of Dental Surgery, the Northwestern University Dental School, the Pennsylvania College of Dental Surgery, the Ohio Medical University Dental Department, the Philadelphia Dental College, and others, on the ground that they did not, in their preliminary examination, come up to that standard established by Rule 8, and demanded that graduates of these institutions presenting diplomas for registration should submit to examination by the Board as to their qualifications to practice dentistry.

This contention of the Board was resisted by a graduate of the Chicago College of Dental Surgery, who brought mandamus proceeding to compel the Board to accept his diploma. The Board moved to quash the proceedings, which motion was denied by the Court with leave to the Board to file its answer. The answer was filed and the case was in that condition at the time of the meeting of the two Associations at Niagara Falls on the 28th of July, 1899.

With a view to the adjustment of the difficulty, committees of conference were appointed by the two bodies, which after going over the matters in dispute, agreed on the side of the National Association of Dental Examiners to recommend that Rule 8 be rescinded, that all colleges having membership in the National Association of Dental Faculties be placed upon the list of recognized schools and that all litigation be withdrawn, and on the side of the National Association of Dental Faculties that a new rule governing the preliminary requirements for admission to the college courses should be adopted.

This action was ratified by the Associations. The Examiner's Association adopted a new Rule 8, Sections 1 and 2 of which read as below, the remainder of the rule having substantially as before. Rule 8, new Sections 1 and 2:

Sec. 1. Colleges desiring recommendation to the State Board by the National Association of Dental Examiners shall make application for such recommendation through the Committee on Colleges, on blanks provided for that purpose. This rule to apply only to schools making application to the National Association of Dental Examiners for recommendation and such schools as may be dropped.

Sec. 2. The following preliminary examination shall be required of students seeking admission to colleges recommended by this Association. The minimum preliminary educational requirements of colleges of this Association for the session of 1900 and 1901 shall be a certificate of entrance into the second year of a high school, or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction, as adopted by the State Board of Missouri.

The Faculties' Association adopted the following rule governing the preliminary educational requirements of students:

The minimum preliminary educational requirement of colleges of this Association, for the session of 1900 and 1901 shall be a certificate of entrance into the second year of a high school, or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction.

Nothing in this rule shall be construed to interfere with colleges of this Association that are able to maintain a higher standard of preliminary education.

The cause of friction being removed the disputes which have arisen, there is every assurance will be speedily adjusted and the two bodies will thereafter work in harmony.

National Association of Dental Faculties.

THE sixteenth annual session of the National Association of Dental Faculties was held in Niagara Falls, commencing Friday, July 28, 1899.

The following colleges were represented, as noted:

Birmingham Dental College, Birmingham, Ala.—T. M. Allen.

University of California, Dental Department, San Francisco, Cal.—A. A. d'Ancona.

Colorado College of Dental Surgery, Denver, Col.—J. S. Jackson.

University of Denver, Dental Department, Denver, Col.—A. H. Sawins.

Columbian University, Dental Department, Washington, D. C.—J. R. Hagan.

Howard University, Dental Department, Washington, D. C.—A. J. Brown.

National University, Dental Department, Washington, D. C.—A. D. Cobey.

Atlanta Dental College, Atlanta, Ga.—H. R. Jewett.

Dental Department of Atlanta College of Physicians and Surgeons, Atlanta, Ga.—Frank Holland, S. W. Foster.

Chicago College of Dental Surgery, Chicago, Ill.—Truman W. Brophy.

Northwestern University Dental School, Chicago, Ill.—Theo. Menges.

Indiana Dental College, Indianapolis, Ind.—George E. Hunt.

State University of Iowa, Dental Department, Iowa City, Ia.—W. S. Hosford.

Louisville College of Dentistry, Louisville, Ky.—H. B. Tileston.

Baltimore College of Dental Surgery, Baltimore, Md.—M. Whilldin Foster.

University of Maryland, Dental Department, Baltimore, Md.—John C. Uhler.

Boston Dental College (Tufts College Dental School), Boston, Mass.—Chas. P. Thayer.

Harvard University, Dental Department, Boston, Mass.—Thomas Fillebrown.

College of Dental Surgery of the University of Michigan, Ann Arbor, Mich.—J. Taft, N. S. Hoff.

Detroit College of Medicine, Dental Department, Detroit, Mich.—G. S. Shattuck.

University of Minnesota, Dental Department, Minneapolis, Minn.—W. P. Dickinson.

Kansas City Dental College, Kansas City, Mo.—J. D. Patterson.

Western Dental College, Kansas City, Mo.—D. J. McMillen.

Marion-Sims College of Medicine, Dental Department, St. Louis, Mo.—J. H. Kennerly.

Missouri Dental College, St. Louis, Mo.—A. H. Fuller.

University of Omaha, Dental Department, Omaha, Neb.—A. O. Hunt.

University of Buffalo, Dental Department, Buffalo, N. Y.—William C. Barrett, R. H. Hofheinz.

New York College of Dentistry, New York City.—Faneuil D. Weisse.

New York Dental School, New York City.—John I. Hart, Roderick M. Sanger.

Cincinnati College of Dental Surgery, Cincinnati, O.—G. S. Junker-man, W. T. McLean.

Ohio College of Dental Surgery, Cincinnati, O.—H. A. Smith.

Western Reserve University, Dental Department, Cleveland, O.—H. L. Ambler.

Ohio Medical University, Dental Department, Columbus, O.—Otto Arnold.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.—Wilbur F. Litch.

Philadelphia Dental College, Philadelphia, Pa.—S. H. Guilford.

University of Pennsylvania, Dental Department, Philadelphia, Pa.—

James Truman, Edward C. Kirk.

Pittsburg Dental College, Pittsburg, Pa.—Walter H. Funderburg.

School of Dentistry, Central Tennessee College, Nashville, Tenn.—G. W. Hubbard.

University of Tennessee, Dental Department, Nashville, Tenn.—L. G. Noel.

Vanderbilt University, Dental Department, Nashville, Tenn.—Henry W. Morgan.

Tacoma College of Dental Surgery (North Pacific Dental College), Portland, Ore.—Geo. H. Chance.

Milwaukee Medical College, Dental Department, Milwaukee, Wis.—Geo. V. I. Brown.

Royal College of Dental Surgeons of Ontario, Toronto, Canada.—J. B. Willmott.

The Treasurer reported that the Dental Department of Tennessee Medical College, of Knoxville, Tenn., was no longer in existence, having been absorbed by another school.

The Tacoma College of Dental Surgery, having removed to Portland, Ore., was given authority to change its name to North Pacific Dental College.

The Trustees of Boston Dental College accredited Dr. C. P. Thayer as delegate to explain to the association that they had transferred the institution, with all its appurtenances, to Tufts College, and to request that the Tufts College Dental School be permitted to make application for membership at this meeting. On motion it was ordered that Tufts College Dental School be accepted as a continuance of the old college, and that the change of name be approved.

The applications for membership of the following schools, having been reported as regular by the Executive Committee, lie over for one year for final action:

Medico-Chirurgical College of Philadelphia, Dental Department, Philadelphia, Pa.

Central College of Dentistry, Indianapolis, Ind.

College of Dentistry, University of Southern California, Los Angeles, Cal.

Illinois School of Dentistry, Chicago, Ill.

Washington Dental College and Hospital of Oral Surgery, Washington, D. C.

Keokuk Medical College, Dental Department, Keokuk, Ia.

The Committee on Text-Books reported recommending that the following be adopted: "Anatomy and Histology of the Mouth and Teeth," by I. N. Broomell, D.D.S.; "The Practice of Dental Medicine," by Geo. F. Eames, M.D., D.D.S.; "Comparative Dental Anatomy," by A. H. Thompson, D.D.S., (recommended last year in proof; "Methods of Filing Teeth," second edition, by R. Ottolengui, M.D.S.

The committee had also examined "Chemistry and Metallurgy Applied to Dentistry," by Vernon J. Hall, Ph.D.; and while admirable, and containing many excellent features, the committee believed it unwise to recommend it as a text-book, inasmuch as there are already two excellent works on the same subject on the list.

Of "Interstitial Gingivitis, or so-called Pyorrhea Alveolaris," by Eugene S. Talbot, M.D., D.D.S., the committee reported that it contained evidence of laudable and extensive research, but the subject is still a matter of so much controversy and diversity of opinion as to make undesirable a text-book upon it at the present time.

The committee also suggested the removal of Clifford's "Manual of Recitations," adopted in 1892, and Burchard's "Compend of Pathology," adopted in 1897.

The following resolutions, laid over under the rules from 1898, were adopted:

Offered by Dr. Allen:

Resolved, That it is the sense of this association that the present method of bestowing scholarships is no longer called for, and is detrimental to the best interests of the profession, and that hereafter no college of this association shall grant either free or beneficiary scholarships not absolutely made obligatory in their charter.

Offered by Dr. Barrett:

Resolved, That it shall be the duty of the secretary of this association to present at the opening of each annual session a list of the colleges, members of this association, who have been unrepresented for two years, that proper action may be promptly taken.

The resolutions of Drs. Allen and d'Ancona concerning the attendance of students were substituted by the following, offered by Dr. Willmott, which was adopted:

Resolved, That students in attendance at colleges of this association, to obtain credit for a full term, must be and remain in attendance until the close of the session.

In accordance with this action, Rule 4 was amended to read as follows:

4. In cases where a regularly matriculated student, on account of illness, financial conditions, or other sufficient cause, abandons his studies for a time, he may re-enter his college at the same or a subsequent session, or where, under similar circumstances, he may desire to enter another college; then with the consent of both deans he may be transferred.

Rule 9 was amended to read as follows :

ADMISSION OF UNDERGRADUATES OF MEDICINE.

9. Undergraduates of reputable medical colleges who have regularly completed one full scholastic year of a six months' term and passed a satisfactory examination in the studies of the freshman year may be admitted to the junior grade in colleges of this association, subject to other rules governing admission to that grade.

The Committee on Conference with the National Association of Dental Examiners reported as the result of several conferences held with a similar committee from the Examiners' Association, that an agreement had been reached concerning the matters which had been in controversy between the two associations for several years. The report was adopted.

The following resolution was unanimously adopted :

Resolved, That the thanks of the National Association of Dental Faculties are due to the Chicago College of Dental Surgery for the courage and persistence with which it has maintained what we believe to be a correct principle, and that we regard the placing as unrecognized and disreputable in the newspapers and otherwise of one of the oldest and best of our professional teaching institutions an injustice that demands complete rectification.

Dr. Barrett offered the following, which were adopted :

Resolved, That the commonly accepted Code of Ethics regulating the conduct of practitioners in their relations with other practitioners be approved and made obligatory upon the dental colleges of this association in their relations with other colleges.

Resolved, That the section of the Code which refers to public advertisements be interpreted to forbid the advertising of the infirmaries of dental colleges in any manner that might be construed to be unprofessional if done by a practitioner.

Resolved, That as dental colleges should in every practicable manner impress the importance of ethical conduct upon their students, and should themselves set a good example in this particular, their public advertisements should be confined to a simple statement of the location of the schools, the date of opening and closing, with any other really essential facts, all details being reserved for the annual announcement, which itself shall not violate the usual accepted ethical tone.

Dr. Taft offered the following :

Resolved, That a Commission, consisting of three persons, be appointed, whose duty it shall be to take cognizance of, investigate, and advise with any parties contemplating the establishment of a new college or the reorganization of an old one.

In the performance of the duties of this commission it shall be competent to take into consideration the following points, viz :

The consideration of any proposed new dental college ; taking into account all the circumstances that attach to it ; the motive that prompts such an organization ; the need for it ; the proposed locality ; the character and ability of those who propose to conduct it ; the sufficiency of the resources that may be available for its establishment, and whether, on the part of the promoters, there is a just appreciation of that which is required for such an institution.

The attainment of full knowledge on these points would enable the Commission to advise wisely.

It would be the duty of this Commission to report to this body at each annual meeting.

The resolution was adopted, and it was ordered that the commission be elected with the other officers.

The following amendment to the constitution was adopted :

Change Article V to read as follows :

Article V. The Executive Committee shall consist of five members, three of whom shall be elected annually ; the two receiving the higher number of votes shall hold office for two years each. The Executive Committee shall have power to designate the time and place of meeting, make preparations for same, and transact such other business as usually devolves upon such committee. That five members be elected this session, the two receiving the higher number of votes to serve for two years, the other three for one year each.

On motion of the Executive Committee, it was ordered that colleges making application for membership in this body shall have present a copy of their annual announcement and that a duly authenticated representative of the school be present at the meeting ; without which the application shall not be considered.

It was decided that the change from six to seven months' terms, which goes into effect with the session of 1899-1900, should apply to all students in colleges of the association, even though the students may have previously attended under the six months rule.

On motion of Dr. Barrett, it was ordered that a Committee on Law, to consist of three members, be elected to serve as a standing committee, which shall be authorized to levy such assessments upon the members of the association as may be necessary for the payment of past legal expenses and such as may accrue in the future in the suppression of the issue of fraudulent diplomas. Such assessments to be lodged with the treasurer, and paid upon the order of the Committee on Law. It was also ordered that all legal matters which may arise in connection with the National Association of Dental Faculties, shall be referred to this committee.

The Committee on Foreign Relations, in concluding the report of its work for the year, offered the following resolutions, which were adopted :

Resolved, That the Foreign Relations Committee be instructed to take any steps which they may deem advisable for the putting an end to the issuing of fraudulent and irregular degrees, and to this end are authorized during the coming year to use any funds in the treasury of the association upon the approval of the Law Committee.

Resolved, That the European Advisory Board of the Foreign Relations Committee be and is hereby invited each year to send a delegation to attend the annual meeting of this association, and that such delegation be accorded seats in the meetings of the association, with all the privilege of debate.

Resolved, That no student coming from Europe shall be received by any member of the association until his credentials shall have been approved by the members of the European Advisory Board for the country from which he claims to come.

Resolved, That the Committee on Foreign Relations be authorized to appoint Advisory Boards for countries outside of Europe, whenever in their

judgment it is advisable to do so, and report any such action at the next succeeding meeting of this association.

Resolved, That the Foreign Relations Committee be given jurisdiction in all foreign American dental educational matters, subject always to the approval of the National Association of Dental Faculties, to which a full written report shall be submitted annually.

Following are the members of the European Advisory Board, so far as appointed :

Great Britain—Wm. Mitchell, W. E. Royce, and B. J. Bonnell.

Holland and Belgium—J. E. Grevers, Ed. Rosenthal, and C. van de Hoeven.

Denmark, Norway, and Sweden—Elof Förberg.

Germany—W. D. Miller, C. F. W. Bödecker, and — Hesse.

Italy and Greece—Albert T. Webb, Tullio Avanzi, and A. V. Elliott.

France—J. H. Spaulding, I. B. Davenport, and G. A. Roussel.

Spain and Portugal— — Portuondo, Florestan Aguilar, and — Thomas.

Switzerland and Turkey—L. C. Bryan, Theo. Frick, and Paul Guye.

Japan, China and Corea—Louis Ottofy.

Australia and New Zealand—Alfred Burne.

The following resolution offered last year, was again laid over for another year :

Offered by Dr. Hosford :

Resolved, That a four year's course in a reputable college leading to the degree of A.B., Ph.B., or B.S., or four years of biological work, be accepted as one year's credit in the colleges of this association, subject to other rules governing admission to second year grade.

Resolved, That students matriculated in both a collegiate and dental department of a university, having completed the work of the first year in dentistry during the four year collegiate course, may, on graduation with collegiate degree, be given full credit for one year in colleges of this association.

The following, offered by Dr. Foster, was referred to the Executive Committee, to be reported upon next year :

Resolved, That when a student fails in any part of the requirements for obtaining his final degree, such student must hold over till the next regular course, during which time he may re-enter and remove such conditions by completing his work and can only apply for his degree at the close of term as announced in the catalogue of such school.

The following resolutions lie over under the rules till next year :

Offered by Dr. Barrett :

To change Rule 1 to read as follows ;

PRELIMINARY EXAMINATIONS.

1. The following preliminary examination shall be required of students seeking admission to colleges of this association :

a The minimum preliminary educational requirement of colleges of this association after the session of 1901-1902, shall be a certificate of entrance into the third year of a high school, or its equivalent, the preliminary examination to be placed in the hands of the State Superintendent of Public Instruction.

b. Nothing in this rule shall be construed to interfere with colleges of this association that are able to maintain a higher standard of preliminary education.

Offered by Dr. Weisse :

Resolved, That Rule 8, 9, and 10 of the Code of Rules be rescinded, and the following be substituted therefor:

That advanced standing to the junior or senior classes of institutions of this association shall only be upon certificate of one or two sessions' attendance, respectively, in an institution belonging to this association.

Offered by Dr. Truman :

Resolved, That members of this association violating the rules of this body shall, upon conviction, be fined not less than one hundred dollars for each offense, or be subject to censure, suspension, or expulsion, at the pleasure of the association.

Offered by Dr. Barrett :

Resolved, That the Executive Committee be instructed that, except under what they shall decide to be unusual or extraordinary circumstances, and which in their report they shall detail to the association, they shall not report favorably any application for the admission of a new college in the following instances:

1. When there has not been actually secured and bought or leased for a term of not less than three years, and fitted up with all required equipments, a sufficiently commodious and convenient building, entirely adequate to the needs of not less than one hundred students. Such equipment shall include not only the laboratories, infirmaries, etc., with proper chairs, benches, and all apparatus required for complete practical dental instruction, but the rooms and fittings necessary for scientific training, with apparatus and equipments necessary for the proper teaching of bacteriology, histology, microscopy, chemistry, and such other scientific studies as should form a part of an advanced dental curriculum of study.

2. When the character and attainments of its faculty, which must already have been named, and a list of the members of which with the respective positions they are to occupy shall be embodied in the application presented, are not such as to give assurance that the school will be conducted in a manner to reflect credit upon the dental profession, and to insure complete and adequate instruction in all branches of a broad dental curriculum of study.

3. When the proposed dental college or department is evidently and unmistakably intended primarily for the purpose of sustaining or strengthening another existing institution with which it is to be allied.

4. When the city or town in which such college is to be located already contains a college, or colleges, for dental teaching, of acknowledged efficiency, liberal character, and ethical standing, sufficient in their opinion for the promotion of the best interests of dentistry and the dental profession.

Offered by Dr. Guilford :

Resolved, That while examinations for progress should continue to be held annually upon the subjects taught during the year, no final examinations shall be held until the close of the third year.

Dr. Taft, from the Committee on Curriculum, submitted as the report of his committee the following :

SCHEDULE OF STUDIES.

FIRST YEAR.	Hrs. Per Wk	SECOND YEAR.	Hrs. Per Wk.	THIRD YEAR.	Hrs. Per Wk.
Anatomy and Dis- section.....	2	Anatomy, Regional..	1	Therapeutics..	1
Physiology.....	2	“ Comparative	1	Pathology.....	1
Chemistry, Inorgan- ic.....	2	Physiology.....	2	Surgery, General.....	1
Chemistry, Labora- tory.....	4	Chemistry, Organic..	2	“ Oral.....	1
Dental Anatomy.....	2	“ Laboratory	4	Jurisprudence.....	½
Prosthetic Technic... }	10	Metallurgy, Didactic	1	Orthodontia, Didac- tic.....	1
Histology, Didactic.. }	4	Metallurgy, Labora- tory.....	2	Orthodontia, Practi- cal.....	1
“ Laboratory }	4	Materia Medica.....	1	Operative Dentistry.	2
Materia Medica.....		Operative Technic...	4	Prosthetic Dentistry	2
Comparative Anat- omy.....		Bacteriology, Didac- tic.....	4	Electricity.....	
		Operative Dentistry, Didactic.....	2	Ethics.....	
		Orthodontia Technic	1	History.....	
		Pathology.....	2		
		Orthodontia, Didac- tic.....			

INFIRMARY.

Prosthetic Dentistry	5	Prosthetic Dentistry	6
Crown- and Bridge- Work.....	3	Operative Dentistry	15
		Crown- and Bridge- Work.....	4

The following were elected officers for the ensuing year: Jonathan Taft, President; B. Holly Smith, vice-president; J. H. Kennerly, secretary; Henry W. Morgan, treasurer; S. W. Foster, J. B. Willmott, executive committee for two years; H. B. Tileston, Theo. Menges, (chairman), S. H. Guilford, executive committee for one year; W. T. McLean, J. D. Patterson, W. S. Hosford, *ad interim* committee; Truman W. Brophy, Edward C. Kirk, Albert H. Fuller, commission on proposed new colleges; A. O. Hunt, Henry W. Morgan, W. C. Barrett, committee on law.

The newly-elected president appointed the following committees: T. M. Allen, W. S. Hosford, W. P. Dickinson, G. S. Shattuck, J. G. Templeton, committee on schools; A. J. Brown, John I. Hart, Thomas E. Weeks, Edward C. Kirk, Thomas Fillebrown, committee on textbooks; W. C. Barrett, J. D. Patterson, T. W. Brophy, S. H. Guilford, H. W. Morgan, committee on foreign relations; N. S. Hoff, G. V. I. Brown, committee to secure papers to be read at the next annual meeting; S. H. Guilford, W. F. Litch, N. S. Hoff, A. H. Fuller, C. L. Goddard, committee on curriculum.

The Executive Committee reported that it had decided to adopt the suggestion of Dr. Willmott to convene the next meeting on the day of the adjournment of the National Dental Association, at the same place.

Adjourned to meet at Old Point Comfort, Friday, June 29, 1900.

An important fact in connection with the meeting of the National Association of Dental Faculties was the presence of three of the members of the European Advisory Board of the Committee on Foreign Relations: Drs. Lyman C. Bryan, of Basel, Switzerland; John E. Grevers, of Amsterdam, Netherlands, and William Mitchell, of London, England.

•Dr. Grevers, in speaking of the reception to advanced standing of students from foreign countries, probably struck the keynote of the entire situation. He was impressed, he said, with the idea that the foreigner comes to this country to study dentistry for one of two reasons: First, as a graduate, or as one having fulfilled the requirements in his own country, and hopes to secure something here which will enable him to return home and practice. So that if the applicant from a European country is not supplied with the proper certificates the colleges should be cautious about receiving him to advanced standing.

The proceedings of the late meeting were varied by two pleasant, albeit unusual, incidents.

The first of these was a trolley ride of the members of the association and their friends to Buffalo, twenty-five miles away, and return, as the guests of the Dental Department of the University of Buffalo. Arrived at Buffalo they were taken to the college building, where an ample collation was served, accompanied by several felicitous speeches. The various departments of the college were then inspected and pronounced good, after which the party again boarded the trolley cars and were taken to view the grounds where the Pan-American Exposition is to be held two years hence. Then came the return to Niagara Falls, which was accomplished without incident and without fatigue, every one expressing his gratification over the outing.

The second was of the same nature, but involved a visit to a foreign land. The Royal College of Dental Surgeons of Ontario invited the members of the Faculties Association and also those of the National Association of Dental Examiners to visit the college and view the city of Toronto. In response about seventy-five persons took the train at Niagara Falls for Lewiston, where they boarded the steamer for the journey across Lake Ontario to Toronto. Arrived here a short walk brought them to McConkey's, where a fine collation was served and appropriately disposed of. Tally-hos and carriages then conveyed the party to various points of interest in the city, among others Parliament House, where they alighted and spent a short time admiring its beauty of architecture and internal arrangement and fittings. A short drive brought them to the Royal College of Dental Surgeons of Ontario, where they were assembled in the main lecture room, and speeches of felicita-

tion and good-will followed; after which the visitors circulated through the building, inspecting the equipment of the college and having explained to them the methods of instruction in various branches. It was the universal opinion that the school was admirably equipped for the systematic instruction of students of dentistry. The entrance to the college was tastefully draped with the flags of Great Britain and the United States. From the college the party proceeded to the Foresters' Temple Cafe, where a second collation was served; after which they were driven to the steamboat landing. As the vessel moved off three cheers for the Royal College of Surgeons were given with a will. The return journey was made without mishap, and the excursionists unanimously declared they had had one of the most delightful outings of their lives.

National Dental Association.

HELD AT NIAGARA FALLS, AUG. 1-4, 1899.

(Reported for OHIO DENTAL JOURNAL by Mrs. J. M. Walker.)

THE second annual session of the National Dental Association held its meetings in the ball room of the International Hotel, Niagara Falls, beginning at 11 a. m., Tuesday, August 1.

The meeting was called to order by the President, Dr. H. J. Burkhart, Batavia, N. Y., who, after an opening prayer by Rev. A. S. Bacon, of Niagara, proceeded to read his annual address, of which a brief extract follows. After extending a hearty welcome to all present, Dr. Burkhart dwelt upon the various measures inaugurated at the last annual session—the representation of Association at the International Dental Congress in Paris, 1900; the establishment and increase of the Army Medical Museum and Library, Washington, and the gathering of material for a reliable history of the dental profession.

Dr. Burkhart recommended the amendment of the by-laws so as to admit any clean, honest, ethical dentist, regardless of membership in state societies, a change in the method of electing delegates, the present method being too cumbersome, and the requirements too restrictive; there should be no hesitation about a radical departure, in order that instead of a mere handful, the membership roll may consist of several thousands at least. Dr. Burkhart said that he favored the adoption of the rules to be

reported by the committee appointed to revise the constitution and by-laws, especially in the creation of an Executive Council to hold daily meetings for the disposal of routine business. He favored immediate measures to obtain the appointment of dentists in the army and navy, and the unification of state laws and the enactment of a law making a license granted in one state "a passport for practice, not only on this continent but all over the world," He spoke of the necessity of correcting infirmity abuses and of a high order of ethical conduct on the part of all connected with dental colleges. He also favored the exacting of a higher preliminary standard of matriculation.

The address was referred to a committee, consisting of Drs. Jas. McManus, Thos. P. Hinman, and L. P. Bethel, whose report was discussed at a later session.

Dr. J. N. Crouse asked the privilege of the floor and announced that news had just been received that the "International Tooth Crown Co." had won a suit against a New York dentist, and that with the approval of the Association he would telegraph for the attorney of the Dental Protective Association who would give a full and clear exposition of the present status.

A meeting of the Dental Protective Association was therefore called for Friday, to which all members of the Association were invited to be present.

The Secretary read a communication conveying greetings from the American Dental Society of Europe, and announced the presence of Dr. Wm. Mitchell, of London, and Dr. L. C. Bryan, of Switzerland; as representatives of that society. On motion of Dr. Patterson the courtesies of the floor were extended to the gentlemen, who briefly acknowledged the courtesy, expressing sympathy in all matters concerning the interests of the dental profession, and a feeling of responsibility in upholding the name and dignity of the common calling, with a promise of seconding all the efforts of the parent organization.

REPORTS OF COMMITTEES.

Dr. Thos. Fillebrown, chairman of the committee on revision of the constitution.

On motion of Dr. Hunt, the constitution as revised and amended, was ordered printed and distributed before discussion for rejection or adoption.

The discussion was also deferred till after the report of the committee, as the President's address, which is so largely in harmony with the proposed revisions.

Dr. Chas. McManus, chairman of the committee on History, read portions of their report, which was accepted as a whole and the committee continued; the chairman of the committee being authorized to fill the vacancy caused by the death of the lamented Dr. R. Findley Hunt.

The Treasurer offered his report, showing \$1247.00 collected as dues since the last annual meeting, and a cash balance on hand of \$954.72.

Dr. M. F. Finley, chairman, read the report from the committee on Dentists in the Army and Navy, giving the history of the rejection of the bill by Congress. It was stated that the Surgeon-General was not adverse to the innovation but that he was not sufficiently impressed with its importance to offer such inducements as would secure efficient services.

The report was accepted, referred to the committee in the President's address and the committee continued.

The division on Credentials of the Executive Committee offered a resolution rescinding the vote of censure passed upon the New Jersey State Society, in the matter of endorsing a certain nostrum.

The resolution was adopted. Adjourned to 7:30 p. m.

(To be continued.)

CORRESPONDENCE.

Notes from Georgia.

HINDERED.—Stopped; impeded; obstructed; retarded; is the meaning of this word. Each and all of these meanings kept me from attending the National meeting. Man proposes but does not always dispose. How our plans in life are thwarted, at times. We make calculations and set our plans to do certain things, but are stopped, obstructed, impeded and retarded.

There are over five hundred dentists, good, bad and indifferent, in Georgia. About six attended the National. What a

commentary. We all had excuses; not all either, for some do not care. I say some, I mean about eighty per cent do not care anything about associations. A large number do not know that such an association as the National exists. They are the *sample copy* fellows, Mr. Editor. You know about them, for you have lots of them in Ohio. A number may know that there is such an organization, but do not care to attend. Then, there is the small class who would have been there if they had not been "hindered." "One of which I am whom."

We have a large class down here in Georgia who think that a dental convention is a place where the prices are fixed and all the members have to be governed by them. They tell their patrons that they do not propose to be governed by any set of men, but will stay away and continue to give the best work for the lowest figures. I have thought that Ohio had some of this class. I really believe that Chicago has some of them: though a man in England stood before a body of dentists over there, not long ago, and said that the best dentists in the world are in Chicago. How sadly mistaken this Englishman is. That's just like Chicago to make the unwary believe such a thing. I am surprised that an Englishman should be credulous. Why those New York fellows will never again go to England. They will not deign to speak to another one of them, much less visit their country. My, but wasn't that a whack in the face. This is a day of surprises. It is strange, that all the world does not know that Atlanta has the best dentists.

We will table that question and bring up another. Let it be fees. That is the professional word for it, even though it is a "job of work" that was done. The times are tending downward on the fee line. We Nabobs don't feel it, and neither do we see it, but it is a fact, nevertheless, brought about by heavy competition. The large majority of people do not discriminate between dentists; one is as good as another; so the fellow who is the cheapest "knocks the persimmon." The large number of dentists already out for business, and the large annual output, is going to make things lively before long.

I see that a new college (?) has started. Room; why of course there is room. Oceans of room, if we are to believe a certain man who declares constantly that there are not enough dentists to keep the tartar from the people's teeth. How would

it do to add, provided the people want the tartar removed from their teeth?

Shop talkers and loud dentists. Shall I take up that subject? Isn't it perfectly disgusting to hear the shop talkers on the street cars, in the restaurants, in parlors, everywhere you meet them. I heard of a dentist's wife calling to an acquaintance on a street car, after this fashion, "You have not been to my husband in some time to have your teeth looked after; I heard him say so not long since. You had better go at once." The reply was made in an undertone, "No, and I am not going any more."

The only thing that can beat the shop talker is the loud professor (?) of some 2 x 4 college (?)

I can't help it; my mind got to running along on the multiplying of colleges (?) and this is about what evolved:

Money comes a little slow,
I'll start a dental school.
And won't the dollars to me flow?
Of course I'm no one's fool.

I am not surprised that the American dentists of Europe are becoming alarmed. Fifty schools in the United States of America and more to follow. Drummers must be sent out to supply some of them. Some of the drummers are professors. Here is about the way it goes. Excuse a little more doggerel:

My trade may be a little small,
So I'll send out my men,
And urge of them to make a haul
From mountain, hill and glen.

The drummer sends back not very encouraging reports. The command goes to him:

I must have the boys,
For I am in to win,
There's nothing like decoys,
So hustle them all in.

The competition is heavy, the drummer reports back the difficulty. Again the answer is sent:

See the boys at bench and plow,
Tell them of the city's wonders,
Show them as a dentist, how,
Soon the world will clear of blunders.

Tell them of our spacious hall,
Tell them of our cushioned seats,
Tell them of the throng who call,
With their unsound teeth to treat.
Show them that they have knowledge
Of grammar quite enough,
To adorn the seats of college:
What they lack make up in bluff.
For there's no use in talking,
With colleges forty-eight,
We must do lots of walking,
To get the matriculate.
The other fellow now is out
Hunting, quietly and still;
You too must hustle round about
With a vigor and a will.
I am counting much on you
For a swelling of the pile,
Don't you stop for rain or dew
For the pot has got to bile.
We are in for pay you know,
And if we don't hustle smart,
The other fellow's sure to go,
In style about us; the braggart.

By much hustling, and pushing, early and late, the replies
begin to come in somewhat like this:

I've found the boys at the plow,
I've found them at the drum,
I've found them anyhow,
Your sure to get your plum.
Some of the boys are scant,
In English and the rule,
But no matter, I warrant,
So we get 'em in the school.
For the Nat. Board of Exam.
And Faculty organization,
We won't care a d—ham,
For it's all a speculation.

I'm coming with the crowd,
You needn't be concerned;
You'll find some of 'em loud,
But a penny made is earned.

The above is more truth than poetry, as any one can see, who is 'a judge. For fear some professor will be after my scalp, I shall hie away to the land of the sky, before this is in print, where the speckle trout are anxiously awaiting me.

What a rest it is, to get in the mountain gorges with pole and line, and cast for the beautiful "sports." We will camp in the wilds of North Carolina, where the earth seems to be actually reaching for the skies, and in so doing, has lifted the fern and the oak aloft in praise to the Allwise.

B. H. CATCHING, Atlanta, Ga.

EDITOR'S NOTES.

The National Associations.

THIS has been a notable year so far as the National Associations were concerned. The National Dental Association was a grand success in every way and reflects much credit on President Burkhart whose untiring energy and push added in no small degree to the success of the meeting. The attendance was the largest in years and there was an overabundance of material in the way of papers to be presented at the sessions. In fact some might have been omitted without detracting from the interest of the sessions had there been more thorough work done in some of the sections. But altogether it was a grand meeting and we hope that our good friend, President B. Holly Smith, with the aid of his efficient committees will be able to keep up the standard that has been set this year. Much good work was accomplished in the National Association of Dental Faculties, and also in the National Association of Dental Examiners. One thing worthy of special mention was the bringing about of harmony between these two bodies, so that now there seems to be nothing in the way of their working together for the advancement of dental education. This is essential especially at the present time

when so many important matters are demanding serious consideration.

In this issue will be found the report of the Faculties' Association and a statement of the differences that have existed between the Faculties and Examiners. We commend them to our readers. A special report of the National Dental Association begins in this issue and will be continued each month until finished.

SOCIETIES.

Western Reserve University.

THE commencement exercises of Western Reserve University Dental College, were held June 15th, in Beckwith Memorial Church, Cleveland, O.

President Charles Gilmer, of Johns Hopkins University, delivered a suitable address.

President Charles F. Thwing, D.D., LL.D., conferred degrees upon the following graduates:

R. W. Andrews, A. D. Apple, A. L. Atwater, L. D. Auxter, H. A. Baldwin, V. E. Barnes, G. Bridgeman, William E. Costello, Harry P. Eaby, Leigh L. Finch, Samuel T. Gilmore, Emanuel Grossman, Frank J. Gunn, J. C. Kelley, John Mistr, Charles C. Mottinger, Jay K. Nash, Edward L. Norton, Frank L. Olds, Jas. A. Rupert, Frank W. Stevenson, Cameron R. Stewart, Charles E. Taylor, Oscar J. Van Dorston, Samuel M. Weaver, John B. Webber, Charles N. White, Douglas A. Wright, Dan H. Ziegler.

Vermont Board of Dental Examiners.

A MEETING of the Vermont Board of Dental Examiners, will be held at the Pavilion Hotel, Montpelier, Oct. 18, 1899, at 2:30 p. m., for the examination of candidates.

The examination will be in writing and include anatomy, physiology, histology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anaesthesia, operative and prosthetic dentistry, together with an operation in the mouth.

Candidates must come prepared with instruments, rubber-dam and gold.

Applications, together with the fee (ten dollars), must be filed with the secretary on or before Oct. 10.

GEO. F. CHENEY, Secretary,
St. Johnsbury, Vt.

Missouri State Dental Society.

At the thirty-fifth annual meeting at Kansas City, July 11-14, 1899, the following officers were elected: President, Dr. W. L. Reed, Mexico; 1st Vice-President, Dr. S. J. Smith, Columbia; 2d Vice-President, Dr. A. M. Tutt, Liberty; Corresponding Secretary, Dr. B. L. Sharpe, St. Louis; Recording Secretary, Dr. H. H. Sullivan, Kansas City; Treasurer, Dr. J. A. Price, Savannah. Next place of meeting will be at Louisiana, Mo., the first Tuesday after July 4, 1900.

B. L. SHARPE, Cor. Secretary.

National Dental Association.

THE National Dental Association will hold its next annual meeting at Old Point Comfort, Va., commencing June 26, 1900.

The election of officers resulted as follows:

President, B. Holly Smith, Baltimore, Md.

Vice-President, from the *East*, John I. Hart, New York.

Vice-President, from the *West*, Truman W. Brophy, Chicago.

Vice-President, from the *South*, M. F. Finley, Washington.

Cor. Secretary, Emma Eames Chase, St. Louis, Mo.

Rec. Secretary, Geo. H. Cushing, Burbank, Cal.

Treasurer, Henry W. Morgan, Nashville, Tenn.

Executive Committee, H. A. Smith, J. D. Patterson, (to succeed themselves) and S. F. Waters.

Executive Council, H. J. Buckhart, Thos. Fillebrown, J. Y. Crawford, J. S. Cassidy, W. E. Griswold.

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CONTRIBUTIONS.

The Effect of Heat on Dentine.

BY W. D. MILLER, M.D., D.D.S., BERLIN, GERMANY.

IN the OHIO DENTAL JOURNAL for August, 1898, an abstract of a paper by G. W. Cook, of Chicago, on the above subject is given, in which particular reference is made to the possible injurious effect that the use of high heat for drying root canals may have upon the antrum.*

The author of the paper arrives at a conclusion, which appears to be very reasonable, that the judicious use of the root canal drier has no detrimental effect upon the dentine. The question of the action of heat upon the dental tissues is however one which cannot fail to interest the dentist, aside from any practical application which it may have.

We are all well aware of the fact that the effect of simply drying the teeth at ordinary temperatures is to make them brittle and to destroy the bond of union between the dentine and enamel, a result which is brought about much more quickly by subjecting the tooth to artificial temperatures, say 100° C, while still higher temperatures destroy the organic matter altogether and render the tissue exceedingly pliable.

*I believe that there was a discussion of this question also in the *Dental Review*, but on recently looking through the *Review* I was not able to find it.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

A series of experiments in which sections of teeth were exposed to different degrees of heat from 50°C to 500°C for varying lengths of time would furnish a ready solution of the question, as far as dry heat is concerned.

When we introduce a hot root canal drier into a moist root canal, we have a sudden development of superheated steam and the moisture in the superficial layers of dentine reaches a temperature probably somewhat above 100°C.

Experiments relating to the action of heat upon the dentine would accordingly be made more interesting and valuable by being extended to include the action of moist heat.

The object of this short communication is only to suggest this line of work and to report a few results of experiments which I began some years ago but was not then able to conclude. I was at that time looking for some means of converting the harder, transparent variety of ivory with the more opaque variety, since the latter has a more extensive range of use, especially for piano keys, and therefore commands a higher price. I had no difficulty whatever in solving the problem, as far as increasing the opacity of the ivory was concerned. Pieces of transparent ivory kept in a few minutes in the vulcanizer at 110°C were found to have become beautifully opaque; but at the same time the heat had so affected the organic matter of the ivory, as to materially lessen its lustre, toughness and general durability, so that the method was practically useless.

When carious teeth are subjected to higher temperatures (160°C) for ten minutes, the carious portions were found to be completely dissolved and the whole tooth so brittle as to be easily broken in the fingers. The enamel suffered comparatively but slight change. It would be a very simple matter to carry out an extended series of experiments on this line, and there is reason to believe that the results would be sufficiently interesting to fully reward the time and labor expended.

In this connection it might be well to point out that the relation of water to the tissues of the tooth may be of a much more intricate nature than the article in question would lead us to think.

In the *Dental Cosmos* for 1894, p. 269, I have already called attention to the experiments of Gabriel, who found that the dentine contains water in three forms: (a) as tissue water, which evap-

orates at ordinary temperatures, (drying) but is completely driven off only after an exposure to 100°C, for some hours; (b) as water of crystallization of the mineral substances of the teeth. This may be driven off by a temperature of 300° to 350°C; (c) as water of constitution, which cannot be expelled by heat at all, except in the presence of silicic acid.

A Case in Practice.*

BY F. S. WHITSLAR, D.D.S., YOUNGSTOWN, O.

IN December, 1897, I was called to see a case of fistulous openings and external discharge on the lower jaw and neck of a Mrs. P., wife of a Presbyterian minister. There were five external openings. Two of them were anterior and low down on the ramus and the others farther back and lower, one of them on the neck two and a half inches lower than the first. The discharge had been continuous for about four years. Patient was about forty years old. Early in life had been treated for scrofula. She was in an emaciated condition and very weak. A careful examination disclosed the fact that the roots of the third molar probably caused this trouble. Inquiry was answered by telling us that a Superb, Magnificent, Never Fail, Painless Dentist, (she however said it hurt) extracted her teeth and in four weeks inserted a lower denture, which has been worn only part of the time, and to use patient's words "the torture has been cruel." When informed that the first procedure in the treatment of her case would be the removal of those roots, she said, "Oh, Doctor, can I stand it?" With assuring words and kindness, but little difficulty was experienced in lifting them with a scoop elevator from their necrosed sockets. The roots were much necrosed. A thorough removal of necrosed structure from and around margin of sockets, a pledget of cotton saturated with aromatic sulphuric acid was placed in the socket of cavity for the purpose of dissolving any necrosed structure not reached with scrapers. This was allowed to remain two hours, and then after its removal, syringing and thoroughly cleansing the parts. Tonics and a generous diet was suggested. The following letter gives result :

* Read before the Northern Ohio Dental Society, June, 1899.

DEAR DOCTOR:—Mrs. P. has followed your directions and is now well. All the openings on her jaw and neck are closed and only a slight scar remains to show where they had been. Mrs. P. has not been so well in years. We jointly thank you for your able service. God bless you. MR. & MRS. P.

Some Considerations Pertaining to the Filling of Teeth.*

BY F. W. KNOWLTON, D.D.S., AKRON, O.

BACTERIOLOGISTS tell us that the mouth is a perfect hotbed of micro-organisms, capable of producing disease, either local or systemic, but their ability to act seems to be governed by the conditions of that inherent principal, sometimes called the *vis vitæ*.

Dr. J. Leon Williams says decay of the teeth is due to gelatinous microbic plaques adhering to the tooth surface, and that the cement substance is more quickly acted upon than the substance of the roots itself by the acid excreted by the microbic plaque, and that it is easy to see that great changes take place through the entire thickness of enamel and deep into the dentine before there are any indications on the surface. Also that the appearances produced by the first action of the acid upon enamel vary considerably. This variation, he thinks, is without doubt, to some extent due to variations in the structure of the tissue, but largely due to variations in the energy of the micro-organisms themselves.

There does not seem to be any question but that an acid decalcifies the inorganic matter, but whether the acid is excreted wholly by microbic plaques, or the result of other conditions, is open to discussion.

Whatever variations there may be in the structure of enamel must necessarily be due to the conditions existing at the time of formation, for if there is practically no organic matter in mature enamel, physiological changes cannot take place, but it is hard to determine in degree the part played by such variations as are found in enamel as modifying factors in decay.

In those cases where the patient neglects all prophylactic measures and in spite of the accumulations, the teeth do not

* Read before the Northern Ohio Dental Society, May, 1899.

suffer to any extent, their escape must be due largely to the patient's vital powers being sufficient to give the oral fluids a constitution capable of overcoming the micro-organisms present, but may not that same vitality give a quality of material as well to the lime salts which constitute the enamel?

Probably the conditions of inorganic matter are such that perfect adaptation of filling material with enamel borders meets its most important requirements alike in all cases.

The dentine is made up largely of inorganic matter and is often treated as such, while the twenty-five per cent of organic matter is practically ignored.

Dr. Miller says that in caries of the dentine the action of acids generally precedes the invasion of bacteria, causing an area of softened dentine by the extraction of the lime salts, the organic matter yielding last.

The photo-micrographs teach us that it is practically impossible in many cases to thoroughly remove all the tooth structure invaded by this acid, and although that which remains is not wholly disorganized, there has been some loss of the lime salts with the organic matter remaining.

Filling material comes in contact with the organic matter more or less in all teeth so treated, and particularly so in proportion as the tooth has become invaded by the micro-organisms.

The nearer we are able to harmonize filling material and nature's demands the more certain will a return to a physiological condition be possible, and a less liability of the organic matter to become disorganized around the filling.

Undoubtedly the dentine receives nourishment through the pulp, and as different structures have different degrees of vitality, and the same kind of structure has not the same degree of vitality in different individuals, or in the same individual at different periods, is it not feasible to contend that there is a difference in degree of vitality in the nutrition which the dentine receives, which may account for the differences in teeth from a clinical standpoint? The fact that the amount of organic and inorganic matter is the same in all teeth, good, bad and indifferent, does not necessarily mean that all teeth are alike.

Dr. Miller says the variations in the amount of salts in the dentine are by no means great enough to explain the variations in hardness.

Dr. Black says there is a constant increase in the proportion of lime salts from youth to old age. He further says: "After the work I have done with the teeth, I have come to regard the organic matrix of the tooth as much more important than I had formerly considered it, and that the conditions of the organic matter seems to have much to do with the strength of the tooth."

Chas. S. Tomes, by tests, confirms Dr. Black's principal contention, that the difference in the total of lime salts, if there be one, is inadequate to produce well marked effects in its physical characteristics, but says the salts may be the same total quantity and still be different in the proportion of carbonates and phosphates.

The authorities quoted undoubtedly believe there is a difference in the dentine, but whether this lies in the composition of the inorganic salts or in the organic matter itself, or both, must be left for the future to determine, but does not the question of vitality enter into the proposition in either case.

The organic and inorganic matter of the tooth may be accurately tested and compared in the laboratory, yet in the artificial production of caries is it fair that their vitality be subjected to the same tests, for teeth out of the mouth are severed from all their vital connections, and recently extracted and pulpless teeth are on the same plane in this respect.

Has there been any experiments to show conclusively that the fluid or albuminous substance of dentine does or does not have some deterrent principle that the bodily juices or cells in other tissues have, either to destroy, to lessen the force or to destroy the toxic products of micro-organisms, the potency of which principle or force varies in different individuals.

It seems as though there must be some basis for the selection and adaptation of filling material to dentine, other than the mere pleasure of the operator to insert this or that kind of filling as his ability to manipulate the different materials may present themselves to his mind. In proportion as we have this very necessary manipulative ability to perform operations will the fillings we insert be perfect from a mechanical point of view, but do not investigations teach us that there are differences in teeth which must be met, in order that the teeth may be best preserved, and that these differences must be considered necessarily along lines of procedure additional to that of manipulability.

Is this not particularly the case with those patients where their condition is such that the pulps of the teeth and glands of the mouth are unable to perform their functions in a physiological manner, and why try to delude ourselves with the idea that we can give our abilities to manipulate full sway in such cases and saving fillings be the result, or are we doing our whole duty to those patients by saying that if they will keep their teeth perfectly clean they will not decay, when in addition to the above conditions the usual imperfections in the formation of the enamel are an insurmountable barrier to each achievement.

When such environment exists as a result of a lowered vital principal, is there not a field opening by which we will endeavor more in the future to arrest decay by treatment applied locally and possibly systematically, which, with proper filling material, when indicated, will meet the growing demands more fully than is possible along the line of mere insertion of material foreign to the existing conditions.

If we are in a position to know the ancestry, we may be the better able to judge whether the environment is acquired or due to that unseen law, heredity, for in some families is there not a liability to incur and also to succumb to disease, as to cause, structure affected, and also as to time, and on the other hand may not the same law apply in exemption from disease as to cause, structure affected and time.

May not the environment of the teeth be acquired through habit. Perseverance in the general laws of hygiene and the proper care and use of the teeth induce a daily habit which cannot fail to produce some effect.

Especially is this noticeable in the habit of thoroughly masticating proper food, which tends to keep the teeth clean and the circulation perfect in the pulps, peridental membrane, gums and glands of the mouth.

If this environment is such as to be amenable to our treatment then our best efforts to perform operations, which mean the expenditure of time, energy and money, are clearly indicated.

While the investigations that have been made in recent years are of inestimable value, may we not hope that in the near future the relative importance of conditions of the tooth itself, instrumentation, compatibility of filling material, medication, both by applications and by being incorporated in the filling material to

diffuse through the dentine, and environment may be accurately determined with entire satisfaction to the profession, so that we may have positive knowledge pertaining to questions of such vital importance on which to base our practice in the preservation of the teeth.

Odontological Society of Cincinnati.

REGULAR monthly meeting, Friday, Feb. 24, 1899.

The essayist of the evening, Dr. W. S. Locke, read following :

Caries and Necrosis of Bone.

BY W. S. LOCKE, D.D.S., CINCINNATI.

Among the various diseases that we are called upon to treat, there are none more important than those of caries and necrosis of bone, and while we do not meet with such cases every day, yet we should be prepared to battle with them when they present themselves to us.

The object of this paper is to bring out, if possible, a discussion which will give us all the ways of diagnosing and treating these diseases. How often have we been called upon to treat what is termed *Chronic Abscess*, and we have treated and re-treated that root canal without success, and why? Because instead of its exciting trouble being within the root or about the foramen of a given tooth, it has often been found to exist some distance beyond, within the process and bone substances as caries and necrosis and simply have its exit through the root canal of this pulpless tooth, but its correction must usually be far more than the treatment through the root canal. Cases have been known where a whole jaw has been destroyed, while the dentist and patient rested under the false impression that the trouble was simply an abscessed tooth. The difference between caries and necrosis of bone is not always definitely recognized or especially described. It is said that microscopically and pathologically they are very much alike, being death of bone for want of blood supply, and precisely the same cellular changes take place in both instances, but clinically there is quite an important difference. I might say here that the statement has often been made

and was recently made by Dr. Thomas L. Gilmer, of Chicago, in his paper read before The First District Dental Society of Illinois, that there was no trouble in distinguishing between caries and necrosis of bone, but I am told it is often very hard to distinguish between them, and that our best surgeons are found treating one disease for the other. However, the treatment of the two cases is so nearly alike that the trouble may be corrected without the mistake being discovered.

Caries of bone is quite analogous to ulceration, usually beginning on some surface external or internal and continuing until the vitality of the blood checks it; while necrosis is that death of bone in which a given area dies from the circulation being either diminished or entirely occluded. In diagnosing caries of bone, fistulous openings will be found so exist (unless there is an opening through some root-canal), the orifices of which are surrounded commonly by fungous granulations. If the trouble has existed for some time the bone tissue will be found spongy or honey-combed and easy to break down under pressure, or is found breaking down, together with a semi-organized lymph exuding into the cells, which in turn is cast off as the cells are destroyed. Such exudation and degeneration are markedly exhibited in many cases of hip disease or white-swelling of the knee joint, where the discharge may amount to as much as a pint a day. Upon looking at the bone it is found riddled with irregular cavities. If the trouble be existing but a short time the surface may be hard, rough and granular. If simply a denuded bone is found with smooth surface (as in some cases of arsenic or cocain poisoning) caries does not exist. The peculiar affinity between this disease and cellular tissue leads to the general belief that it is more common in bones that are loose and spongy in character than to the reverse class. Among the numerous causes of caries are tuberculosis, typhoid fever, tumors, ulcerations of the soft tissues affecting the periosteum, which in turn causes osteitis, but in the oral cavity dead teeth and roots will be found to predominate.

As I have stated before, necrosis is death of bone, where a given area dies from the circulation being cut off from that part; consequently necrosis generally involves a large mass of bone at one time, besides the amount of destruction is frequently defined from the onset by the vessel or vessels that have become diseased or occluded.

This disease very rarely attacks the superior maxillary (except where it follows caries), owing to its extremely vascular condition.

The superior maxillary is composed of two bones and each developed from positively two centers of ossification and more than likely three, although as many as five are mentioned. (Harrison, Allen and others.)

The inferior maxillary is developed from two halves uniting at the symphysis and each half from at least two points of ossification, one for the main portion of the bone, the other for portion of the alveolar border. Your attention has been called to these points because in the extracting say of a molar the alveolar process is sometimes torn partly away and, having its blood supply cut off, necrosis is developed. Now this necrosis seldom involves even the entire half of either maxillary, and when it occurs in the young subject is likely to be limited by area of a point from which ossification has commenced, and the more compact and dense the bone, the more likely is the given area to be destroyed.

The diagnosing of a case of necrosis is usually easier than that of caries, as it involves a larger amount of territory; loose or semi-loose bone is often found in probing and from it comes a very disagreeable odor. Causes of necrosis, like caries, are many. A few of which I will mention. Tumors may be found located so as to compress a nutrient vessel and cause death of the region it supplies. A bullet or any foreign growth may do the same. Too free use of a strong solution of cocain. Destruction of the periosteum or nutrient vessels caused by an operation in which the periosteum is torn away or arteries torn or cut. Probably the most likely of all the causes, are obstructions in the blood-vessels by an embolus or thrombus, and detritus from disease. It is said even bacteria may be so numerous that they plug the branches of some vessel. Still another of great importance and one we should bear in mind, is the use of very powerful astringents or escharotics such as preparations of iron and acids. By the use of the former the vessels are not only contracted, but the blood itself is coagulated and causes not only thrombi, but emboli. With the latter the destruction of vessels and tissue may be so rapid and long continued that in place of simply destroying some small point or patch, a large mass of bone suddenly dies.

The treatment of these diseases depends largely upon the character of the bone involved, also its locality and extent.

In some cases caries are treated successfully without the abortive method. Chloride of zinc, aromatic sulphuric acid, tincture of iodine, and carbolic acid are among the most successful of the local applications, while phosphate of iron and chalybeates seem to be the preferred tonics. Generally, however, if the disease, whether necrosis or caries, has advanced in its destruction to any great extent, it must be removed mechanically before restoration will take place.

I wish to describe a few cases I have had in my practice, which have developed from accidents and mistakes. Mr. B. presented himself, May 2, 1895, for treatment, stating that he had pain in the upper jaw, and pointing to a position near the canine fossa, and that he had been shot during the war in 1865, the bullet breaking in the lateral and cuspid and glancing upwards into the superior maxillary. It was extracted in the field hospital at that time. He claims it never healed entirely, but hurt so little he paid no attention to it until I saw him. Upon probing a large piece of necrosed bone was found. It was removed, the parts well cleansed and treated and within a short time it was well. Now, could this disease have been going on for the entire thirty years?

Mrs. L. called upon me January 4, 1896, to have the superior right lateral treated and filled. I found, besides a large cavity, an abscess which had been treated for some time, with a discharge of pus equal to a thimbleful a day. I treated it in the usual way, but without success, in fact, I believe the discharge of pus became greater each day. I then consulted Dr. M. H. Fletcher, who advised the immediate filling of the root-canal, which was done. The following morning the face was badly swollen and it became necessary to make an incision above the lateral root, and I found caries had destroyed quite a portion of the alveolar process. The parts were well scraped, cleansed and packed with carbolic gelatine balls. It soon became well without the loss of the tooth. The next case I will mention was not so successful. In extracting the inferior left third molar (the first and second molars being absent), I raised the entire process from the inferior maxillary bone, and within a few days found that it was becoming necrosed and I removed that portion as far forward as the first bicuspid.

Another case I will mention, that of an irregularity (the cuspid lying nearly over the lateral, while the lateral was over the bite). The patient gave me three weeks in which to straighten them (as he intended going away at the end of that time). I extracted the first bicuspid and regulated the teeth within the given time, filling out the entire space left by the bicuspid. He has written me since leaving the city that the mouth had been very sore and was told by some dentist that necrosis had set in about the teeth that had been moved, but as it has recovered without any treatment whatever, I am satisfied that the soreness was caused by the rapid movement of the teeth irritating the soft tissues about them.

DISCUSSION.

DR. M. H. FLETCHER: One author in defining necrosis has said that "Absolute and perpetual arrest of nutrition constitutes necrosis, gangrene, or local death." I believe this to be the law in every case of necrosis and caries.

I have recently had my attention called to a number of cases which have presented new features to me, and in endeavoring to find literature on the subject I have failed to get any light. I refer to cases of Progressive Necrosis of the Periosteum, especially where there existed neuralgia, approaching in violence to tic douloureux; although true "tic" does not come usually from such a cause. I understand that it has its origin in the brain centers. Some three or four years ago a patient presented herself, who was the proper age to have tic douloureux, being past fifty. After having gone the rounds of dentists and surgeons she still suffered every torture that can be described from the paroxysms of pain. I had exhausted every possible idea that I could derive, either from my own observation and study of the case, or from literature upon the subject; finally after having with this patient tried every likely solution of the difficulty, I went at the mucous membrane with a magnifying-glass to see if anything would present itself which would help to a diagnosis. Everything had been extracted on this part of the lower jaw, back of the first molar. Two years previously this molar was the seat of the trouble, apparently. Upon extracting the pulp cavity was largely filled with new growths. This treatment did no good, and the tooth itself was finally extracted by another dentist. I tried to

send the patient away, but she came back time after time even after that tooth was out, suffering the same as ever. So with a magnifying-glass on the summit of the ridge, at the seat of the former first molar, I discovered a tiny little slit in the mucous membrane, not longer than probably one-sixteenth of an inch. Thinking possibly there was a bit of loose bone, sequestrum or point of a root, I went down with a probe. Much to my surprise, the probe went under the flesh, and down the inside of the inferior maxillary bone to the lower border of the jaw. Further exploration showed me, that the whole inner surface of the inferior maxillary bone, from the bicuspid to the inferior dental foramen, was denuded of periosteum. There was no pus; there was no swelling, no redness—nothing to indicate any pathological condition there except the subjective symptoms. This was quite an awakening to me; so the opening was enlarged and I injected into the pocket a solution of tincture of iodine, and 50% alcohol, on the principle that if there were bacteria there, or pus, that the iodine would destroy them and possibly induce a recovery from acute inflammation.

The injection of this fluid produced intense pain, as you may imagine; if for no other reason pain would have arisen from the fact that the fluid went clear back to the inferior dental foramen, where the inferior dental nerve and blood-vessels were involved. This treatment was continued for more than a year.

After the first treatment, and recovery from the severe pain, the patient was free from the paroxysms for a day or so at a time; previously it would come on every hour, or every few hours. The case when finally discharged had a paroxysm every two or three months. As near as could be told the periosteum had recovered itself clear up to the opening. On running an instrument over the surface of the bone in this pocket, it seemed to be eburnized; it did not seem dead, but had a hard glassy surface, like ivory.

With this experience in mind all similar cases thereafter presenting themselves, were looked upon with a suspicion of resembling what has been described. I have since had two cases which very much resembled it, but not so extended in duration. I have had a number of cases in which there was persistent neuralgic tendency in the face, which showed every evidence of coming from a *progressive necrosis of the periosteum*. One case, for example, was a young lady of thirty, who had had continuous

trouble not only with the lower but the upper teeth. I examined them carefully. No pus was found about the teeth, and nothing that resembled pyorrhea; but on closer examination I found the alveolar borders around the necks of the teeth dead, no feeling in them, no sensation, and perfectly dry.

In three or four of the teeth a delicate point could be run half-way from neck to apex without any sensation, indicating that the peridental membrane was dead. A bur was employed to cut away these dead portions, and cleansed the sockets by injections for sterilizing; and after six weeks' treatment I considered the case suitable to discharge. The only pain present after the beginning of the treatment was that soreness which naturally comes with inflammation, due to a recent injury of some kind.

Within the past three days I treated a similar case simply in one tooth, a tooth that had been filled a number of years, the filling having been worn away and hammered out of position because of the wearing away of the ivory. The tooth was re-filled, and still the pain did not disappear; and I saw nothing to make me think there was dead bone; but the persistence of the pain made me look for it. The subjective pain was at the first molar on the left side below. On close examination it was found a point could be run underneath the flesh on top of the alveolar ridge half or three-fourths of an inch back, without any pain resulting. I found what I considered eburnized bone, and went at it with a bur, cutting down on the sides till sensitive tissue was reached, which indicated I had got down to the periosteum, and cut away in the center where there is very little feeling under any circumstances, until sufficient dead bone had been removed. Still the case did not get well, and on further examination a few sittings afterwards, it was found that between the molar and the bicuspid the septum was dead. This was cut away till sensitive tissue was reached; afterward the only sensation reported by the patient was that of soreness, which naturally comes with acute inflammation, but the neuralgic tendencies had disappeared.

This is a report of three cases, which it seems to me are typical of this class of troubles. I should call these cases necrosis of a decided type. There was no sequestra, but the periosteum, having the blood-vessels contained in it, when it became destroyed, naturally arrests the nutritive fluids that go to support the bone.

In cases of pyorrhœa there is a continual attempt of nature

to repair, whereas in the cases reported there seems to be a lack of blood supply. I should be glad to hear of any cases comparing with those of progressive death of the periosteum. I don't know that any have been reported, although I may have overlooked them, and should be glad to hear from others present.

DR. SAGE: I don't know that I have observed many cases answering to the description of these that Dr. Fletcher has given us; but it seems to me that similar conditions to those he found may be averted in a great many cases if we will lance a little more frequently than we often do, in bad cases of abscess, especially in subjects of a strumous diathesis, or anemic and broken down in health generally. Where we find abscesses and a good deal of puffing of the soft tissue, and very extensive sympathetic inflammation, we need to lance freely and get thorough drainage, so as to allow the periosteum to settle down upon the bone and become united again. Thus we avert the trouble that Dr. Fletcher has spoken of, which probably commences in just that way, through acute inflammation separating the periosteum from the bone, and finally chronic inflammation eventuates. There are some obscure cases of necrosis which I think indicate a previous history of syphilis, where we would not be led from any statement of the patient to expect anything of the sort. Perhaps a node will form on the side of the hard palate, and upon breaking down, there will be a sloughing and extensive inflammation and suppuration of the periosteum, and necrosis as a result. The sore will have all the characteristic appearance of a syphilitic sore, and yet the patient will deny any complication of syphilis—perhaps with perfect honesty of intention, too; for it may be that this is the first manifestation of the syphilis that has occurred in twenty years, while the poison has been lurking in the system all that time, the patient himself having almost forgotten that he ever had any of the symptoms of syphilis. I am inclined to think that in a great many cases which we think are necrosis or caries of bone, that we don't need to treat them as anything more than abscesses. I find with such treatment alarming cases will subside without any necrosis usually. There is a great deal of necrosis setting in about the necks of teeth that we don't hear about after the teeth are extracted. Sequestrum is formed which the patient hardly notices. Still, necrosis, when it occurs, is very serious.

DR. H. W. LEFÈVRE: I had a case to-day which has some-

what puzzled me. A gentleman presumably forty-three or forty-four years of age presented himself for the extraction of a tooth. It was the lower third molar, left side; and very loose. He said it hurt him when he closed his teeth. I took it out. I examined his other teeth and found all of the molars and bicuspid quite loose with the exception that on the right side above he had lost the three molars. To my surprise, the three corresponding molars below were very firm, but the remaining bicuspid and molars were quite loose. I thought it was a case of pyorrhœa, but upon close examination, there was no pus whatever. The gum was almost in its normal position and very near its normal color, but upon close examination I found that the alveola from the third molars to the first bicuspid on the left side, above and below, was necrotic, and down in between the roots of the lower molars and the septum between the roots, was also necrotic. I removed the septum between the roots and the teeth, outer plate and inner plate, to the depth of about one-third the length of the roots. While there was a very slight deposit of tartar there was nothing that I could see that would cause this condition, but after removing these particles of necrosed bone and washing out with antiseptics, and treating as I thought best, the patient got up out of the chair and said, "My teeth feel good!" Before they were so sore that he could not use them without pain. I am inclined to think that this was a case of progressive alveolar necrosis, such as mentioned by Dr. Fletcher. There was no indication of any other trouble whatever, the patient being a large, strong man, and apparently in perfect health.

DR. H. T. SMITH: I find the paper a very interesting one. The distinction between caries and necrosis is a favorite one in pathology and the discussion of the paper must largely resolve itself into a recitation of cases. I have in mind a case that was sent to our office from Wilmington, a man about forty-five years of age. He presented himself suffering with a well developed case of antral disease. The first molar had been extracted, and the case was treated from day to day by thorough syringing according to the usual methods. The case was under treatment in Cincinnati for about a month. During that time the second and third molars gradually loosened and were extracted. Necrosis of the maxillary developed and a number of sequestra were taken away from the molar region of the superior maxillary bone. The

opening into the antrum was gradually enlarged until two fingers might easily be passed into the antrum and exploration thoroughly made. The case did not get on at all well, and the man finally went back to Wilmington. It certainly was a case of necrosis; the sequestra that came away were in pieces as large as half an inch in length by a quarter of an inch in width. It was not supposed while he was under treatment here that it was a case of cancer. After his return to Wilmington the man died, I think within six months, from cancer. This goes to prove that in these cases of necrosis we may be treating very serious conditions without knowing exactly the nature of the disease.

DR. H. A. SMITH: If it be in order I would like to mention a case of implantation which I saw recently. Implantation was performed by Dr. Younger, of Chicago, two years and a half ago. The tooth was a superior cuspid implanted in the space of a cuspid tooth that had never erupted. The patient was a dentist. The tooth was selected by the patient and he made this statement regarding it.

He said he looked about for a suitable tooth for some time and finally found a cuspid extracted about six months previously which in color and appearance was a perfect match to the one on the opposite side. I examined it by flexing with the finger and found it was quite solid and the gum tissue very perfect about the neck of the tooth.

The point occurred to me after hearing the essay this evening that in the case I have just mentioned we have a necrosed or dead tissue, not dead from necrosis pathological conditions, but dead from having been forcibly removed from nutrient supply, yet it has been tolerated for more than two years in contact with the alveolus and to all appearances would be tolerated indefinitely if we did not know that the average life of implanted teeth is five or six years. I have no doubt in this particular case there is a process of resorption of the root of the tooth going on all the while. Yet here we have dead tissue remaining solidly in contact with living tissue, just the opposite of the condition which has been described by Dr. Locke. So long as there is absence of pus we have resorption by a special class of cells proliferated for that purpose. I should mention that Dr. Younger believes an implanted tooth is not necessarily a necrosed tooth. He says the periodental membrane may revivify. This is highly improbable.

A practical point is—that in spreading gangrene the tissues have not the power to resist injury caused by the inflammation constantly furnishing through micro-organisms fresh quantities of the irritant. Then if a cure is effected the suppurative process must be arrested by free use of germicides.

DR. WRIGHT: I think there is a difference between caries and necrosis. The term necrosis is used to imply the death of any hard substance like bone that has been removed from nutrition from any cause, as thrombus, embolus, a tumor, a bullet, or any other cause, as stated by Dr. Locke. Removing nutrition from any part from any cause produces necrosis of the area involved. Caries, it seems to me, it may be difficult to make an adequate diagnosis of, but is according to my idea a different disease. It seems to me that there is a definite change in the bone known as caries, while there is on the other hand active regeneration going on. In necrosis, that regeneration is not going on. The regeneration is outside, inflammatory regeneration outside of the sequestrum; while in caries in the tissue itself there is constantly that regenerative change, making an effort to overcome the degeneration. It seems to me it is owing to the presence of some specific micro organism.

DR. CALLAHAN: There is one important little point in the diagnosis that has not been mentioned, that might assist a great many. This is given by Marshall. If you will take the pus as it comes from the fistulous opening, where you are in doubt as to whether necrosis or caries exists, and rub the pus between your fingers, if caries be present you will always find a granular condition due to small particles of broken bone, which you will not find the case in necrosis; caries being, according to his definition a molecular destruction of the bone substance.

DR. LOCKE: Caries very often will attack a certain part and will surround a certain portion of bone, and after the blood supply is shut off from that portion of bone it becomes dead and is called necrosis, or I believe as the term is, caries necrotica, and it just came to my mind as to whether or not the two diseases were not one and the same only in their different form. Now, is it not possible that we often cause these troubles ourselves? We treat a tooth, in fact I used to treat abscessed teeth sometimes for days and weeks, and I don't know that it did any good; but now I cleanse them thoroughly and fill them immediately.

National Dental Association.

HELD AT NIAGARA FALLS, AUG. 1-4, 1899.

(Reported for OHIO DENTAL JOURNAL, by Mrs. J. M. Walker.)

The Specialization of Our Preliminary Education.

BY DR. R. H. HOFHEINZ, ROCHESTER, N. Y.

AFTER reviewing briefly what *education* was supposed to mean in the middle ages, the forming of young knights or of young monks, the conceptions of Erasmus, of Sturm, of Comenius, and others, and the illumination thrown upon the problem of education by the doctrine of evolution, the essayist dwelt upon the importance of natural aptitudes and the advantages of specialization. A one-sided scientific education may become as harmful to a profession based upon esthetic and artistic training as a one-sided, technical training would be. This is recognized in all the dental schools, but the preliminary, has it been recognized in the training of the dental student? Are the three years of the dental college course sufficient to train unskilled hands that have had no previous chance for the development of usefulness and skill?

Preliminary education is bestowed upon the mind, while the executive functions of the physical system are ignored. A student who has not developed some manual skill, under favorable conditions at the age of eighteen, does not possess the physical requisites for a good dental operator; the student who is not naturally endowed with a reasonable amount of technical ability, will never become an expert dental operator. Hence the necessity of the introduction into all secondary schools of drawing and constructive work.

The educational value of manual training has been established beyond all contravention. It develops in the pupil powers of thought and expression, and calls out the executive powers, giving self-confidence in dealing with actual material.

Public education in art is needed; the art spirit should enter into everyday labor. The public—or primary—school should take account of the esthetic faculty, which belongs to the higher nature of the child. It is the testimony of the most eminent

educators that manual training does not interfere with Academic advancement. On the contrary, it gives added intelligence in comprehending what is brought to the notice of the pupil and a wider range of thought.

Preliminary education must adjust itself to the needs of the future, and no where is this more necessary than to the future dentist. His early training must have a more specific direction—not at the expense of science but for its benefit. Hand-in-hand with the training of the mind must be that of the hand and eyes. The intellectual culture of constructive art is as great as mental discipline; a great moral discipline; an incentive to greater honesty, for honesty is but the moral expression of exactness.

DISCUSSION.

In the discussion of this paper DR. JAMES TRUMAN expressed the opinion that the most impressive consideration suggested by the paper is that a young man who has attained the age of eighteen years, without the opportunity of acquiring manual dexterity, will rarely or never acquire the practical skill essential to the successful dental operator. He suggested for the consideration of those who hold that the dental student should take a full medical course after his preliminary high-school and college training, before entering upon the study of dentistry, the question,—What would be the age of that young man on entering the dental college, and what would be the probabilities as to his attainment of manual dexterity at that age?

DR. G. V. BLACK said that he wished to endorse the views of the essayist and those expressed by Dr. Truman, on this point. He was most heartily in accord with the expression of the necessity for acquiring manual training in early school life; of learning to use the hands to accomplish something; to produce something; to be useful. With all our boasted advancement there is yet much to be gained in the future, especially in the direction of manual skill, the mind and hand working together for good; for that which shall endure.

DR. GEO. D. SITHERWOOD spoke of the well-known fact that there comes a time in the life of a man when he cannot learn to write. It takes years to train the hands to form the letters mechanically. He spoke regretfully of the growing tendency to confine the study of dentistry to the dental college, with "the

faculty" as preceptors. The graduate who has had only the opportunities offered during his college life will find himself deficient in practical skill when he undertakes his first piece of bridge-work, or his first crown, if "the faculty" has been his only preceptor. They must have preliminary manual training before entering the dental college, and this should be acquired in the office of a competent preceptor.

Dr. Sitherwood's views on this point were not sustained by subsequent speakers.

DR. TRUMAN W. BROPHY said that Dr. Sitherwood apparently had in mind the conditions existing twenty years ago. Through the technic work now done in the colleges the young man can get as much benefit in three months as he could in a year in my dental office.

DR. C. N. JOHNSON feared there was danger in the increasing tendency towards specialization which tends towards narrow-mindedness. The results of the *preceptor system* depend largely upon the preceptor, but it is an actual fact that the first year in the dental college is spent by the student in *unlearning* what has been learned with a preceptor.

DR. GARRETT NEWKIRK spoke of the correctness of the principle that unless a man develops mechanical skill early in life he will not be successful in the manipulative work of operative dentistry. It was formerly the fashion to study under a preceptor but now the colleges prefer to take a boy who has done no such preliminary work and start him at once in technic work. He said the advances made along this line have been a revelation to me.

DR. B. HOLLY SMITH agreed that the boy should start early in his life's work if he expected to be skilled in manhood. The mind and hand should be developed and trained together. The old preceptor-system was all right when the preceptor himself was all right, but often the so-called student was relegated to the laboratory and given charge of the vulcanizer, with an occasional chance to collect bills; in such a case his chances were not very good for becoming a skilled operator.

Dental Articulation and Occlusion.

BY WM. ERNEST WALKER, PAN CHRISTIAN, MISS.

The teeth have two articulations—the dento-alveolar articulation, their relationship with their alveoli, and the inter-dental articulation, a gliding movement of the lower upon the upper teeth, the latter being an important matter for consideration in the arrangement of cusps in prosthesis, in orthodontia, in contour operations, and in periodental diseases. Occlusion is the mere coming together of the teeth, principally cusps to sulci—the act of closing the teeth and lips and keeping them closed. (“Occlusion, a shutting up; a closing.”—*Century Dict.*)

It has, however, been suggested or recommended that in order to avoid the double use of the term, the word articulation be used only in its strictly anatomical sense, as describing the relationship of the teeth to their alveoli; the term occlusion to be used in reference to the relationship between antagonizing teeth.*

The “relationship between antagonizing teeth,” however, presents itself in several widely varying aspects, more different each from the others than are the two modes of articulation.

While confusion may possibly arise from the double use of the term articulation, it becomes “confusion worse confounded” when we attempt by the use of the term occlusion to express not only the position of the teeth when the mouth is closed and the teeth brought together with cusps interlocking on both sides simultaneously, but also to the expression of all the different relative positions the teeth may assume in the lateral and protrusive excursions of the mandible, as in biting, or in grinding food on the right side or on the left, in the function of mastication.

The generality of writers, therefore, use the words articulation and occlusion with the specific meaning applied to them by Dr. W. G. A. Bonwell in his well-known treatise, “The Geometrical and Mechanical Laws Governing the Articulation of the Human Teeth.”

In the latest authority on this subject—“The American Textbook of Prosthetic Dentistry,”—Dr. Molyneaux says, (p. 346), “The lower jaw has only one position of complete occlusion, and

* See *Dental Cosmos*, December, 1896, pp. 1023 and 1036 for texts of words, the discontinuance of which has been recommended, together with the terms advised see use as substitutes.

that is when both condyls are resting in the glenoid fossæ and the mouth is closed."

The positions in articulation are various, and in occlusion the teeth have a much greater amount of surface-contact than in any position of articulation.

That the exclusive use of the term occlusion to express all the phases of relationship between the antagonizing surfaces of the teeth, has not proven satisfactory to the profession at large, was shown by the essayist in the continued use of the term articulation by the best writers, not only in dental periodical literature, but especially by the authors of the different chapters in the American Text-book of Prosthetic Dentistry, from which quotations were given from the chapters by Drs. Essig, Burchard, Goddard, Molyneaux, Ambler Tees, W. W. Evans and A. H. Thompson.

The use of the word articulation in reference to the antagonizing surfaces of the teeth, by Dr. E. S. Talbot, in his latest work, "Interstitial Gingivitis," was pointed out; also the continued use in papers and discussions before the Academy of Stomatology, (Philadelphia); the Institute of Stomatology, (New York); the American Academy of Dental Science, (Boston); the Section of Stomatology of the American Medical Association; the New York Odontological Society, and numerous other scientific bodies.

As it is always undesirable to make radical departures from long established usage unless any decided advantages are apparent, the words articulation and occlusion having been long used in a clearly defined and specific sense, by the most prominent men in our ranks, it would seem advisable to continue to use them in that sense until some erudite scholar shall supply us with new terms free from the objectionable double application and more than partially expressive, though it is to be desired that proper discrimination should be made by the few who have used them as synonyms.

Discussion of this paper was deferred until after the reading of the other papers offered by Section 2.

A Supreme Court Decision.

BY DR. J. A. CHAPPELL, ATLANTA, GA.

In December, 1863, a decision was rendered by a Judge of the Supreme Court in North Carolina, by which the dental sur-

geon is declared the coequal, from a legal standpoint, with the physician, and as such, by act of Congress, exempt from army service and jury duty. The record is found in the Sixtieth North Carolina Reports (Winston's).

One John W. Hunter sought exemption from army service on the ground that being a graduate dental surgeon he was a physician, and as such, entitled to the exemption provided for "all physicians in the actual practice of their profession." The question that arose was—does the graduate dentist come under the definition of physician? Evidence was accordingly taken as to the course of instruction in dental colleges and the knowledge which it was necessary to acquire in order to obtain a diploma and practice with skill. The conclusion of the learned judge, from the depositions and arguments filed is given in these words: "I am satisfied that a regular graduated dentist is a 'physician.' . . . If a tooth has to be extracted the 'surgeon dentist' by his knowledge of 'physiology' ascertains the condition of the system, and by his knowledge of 'materia medica' administers the necessary alteratives to put it in proper condition. By his knowledge of 'anatomy' he finds how the tooth is inserted in the jawbone, and knows what instrument will extract it with as little pain as possible and without injury to the bone. And the depositions state that frequently 'surgeon dentists' are called on to perform delicate operations on 'the facial parts' (the upper and lower jawbones) which require an intimate knowledge of the structure of the bones and the location of the arteries, veins and nerves. In short, the teeth being more subject to decay and disease than any other part of the human body, I am satisfied not only that regular educated dentists are 'physicians,' but that the human family are much indebted to them for confining themselves to a 'specialty,'—that is, one branch of the profession, whereby that which was some years ago a mere mechanical art, has become a useful and important science. It is, therefore, considered by me that John W. Hunter be forthwith discharged, with leave to go wherever he will."

This paper was passed without discussion.

Dental History.

Dr. B. J. Cigrand read a paper urging the importance of making the study of Dental History a part of the Dental College

curriculum. Evidence of the progress of modern dental science is found in the ever-increasing interest manifested in historic research. Lessons of wisdom for the future are to be drawn from the events of the past. To the dental student the history of the progress of dental art and science must be held with the deepest interest.

There are at present six medical colleges which include the study of medical history in their course of instruction. The Illinois School of Dentistry was the first dental school to create a chair in dental history. Others will doubtless soon fall into line.

DISCUSSION.

In the discussion of this subject DR. CHAS. McMANUS expressed his appreciation of the interest taken by Dr. Cigrand in the subject of Dental History, and hoped that the present agitation of the subject may yield satisfactory results. The subject of Dental History, if properly put before the profession, is capable of doing great good. The medical profession prides itself upon its past, and points to Hippocrates, Escalapius, etc. If we would put ourselves on the same plane we must do all we can, as individuals, as colleges, as state societies, as national societies, to aid in the gathering up of material for a correct history of our past. We have a history; it runs back three thousand years. It is a good idea to give it a place in the dental college curriculum. The time is ripe for all dental colleges to teach dental history and to establish chairs of history.

DR. W. C. BARRETT said that he was more than anxious to see a proper history of dentistry—one that shall not include the many foolish traditions that have been handed down from the past but which have no foundation in fact. The true historian must be able to sift fact from fable. The truths of history only must be taught in our schools.

DR. G. V. BLACK said that in the study of medical history students in their fourth year are referred to the old volumes in which alone the records are to be found, and quoted in their reading, but there is no one volume in which it is all written out. It is a study which offers many difficulties but the reward is sure.

In closing the discussion DR. CIGRAND said that if each individual would feel that he had a personal interest in the matter a great deal could be accomplished. The material for a history of

dentistry is in existence but very much of it has yet to be discovered and made available.

Among the distinguished foreign members of the dental profession present at the recent meeting of the National Dental Association at Niagara Falls, may be mentioned Dr. Grevere, of Amsterdam; Dr. L. C. Bryan, of Basle, Switzerland, and Dr. William Mitchell, of London, England.

(To be continued.)

ALL SORTS

Perfect Joints for Porcelain Crowns.

In placing all-porcelain crowns on the incisor teeth, the difficulty of making a perfect joint has led to the introduction of several devices of doubtful utility. I believe the following method has come nearer solving the problem, at a less cost of time and labor, than any that has yet come under my personal observation.

Let us assume, for the purpose of illustration, that an incisor, the crown of which is two-thirds gone, is to be replaced with a porcelain crown. The crown being properly prepared and partially filled, the tooth is trimmed down on the labial side with an Ottolengui root-facer at an angle of about forty-five degrees, to a point well under the festoon of the gum; it is then trimmed with the same instrument at the same angle on the palatal side flush with the gum, giving the appearance of a wedge with the labial side a little deeper than the lingual. A Logan crown is selected of the required color and width, the length being sufficient without grinding. A piece of very soft platinum foil is then carefully burnished over the end of the root, leaving plenty of surplus antero-posteriorly, and as much as possible on the sides. The center is perforated for the passage of the pin and the platinum is laid aside.

The properly colored body is mixed to the consistence of thick cream and carefully worked into the recess of the crown about the pin until it is overfull. The platinum is then placed on the root, care being taken to get it into exact position, and the crown pushed home in much the same manner as when cementing it fast. This forces out the water and leaves the body almost dry. A little bibulous paper is passed around the edge to take up the water, and with a fine camel's-hair brush the surplus body is removed, and the tooth, body, and platinum withdrawn intact. These are placed at the entrance of the furnace for about two

minutes to complete the drying, then carried to the center and the heat raised until the porcelain is fused, when it is shut off and the piece allowed to cool.

The whole process of baking and cooling takes about ten minutes. The work is tried in the mouth to be sure nothing has been disturbed, and then if there has been any appreciable shrinkage, which is unusual, the loss is made up by painting on a little more body with a camel's-hair pencil and baking the piece again. When cool the platinum is readily stripped from the porcelain with a pair of operating pliers, and we have a perfect fitting V-joint, which is universally recognized as the most desirable.—R. M. SANGER in *Dental Cosmos*.

Restoring Badly Broken-Down Molars and Bicuspids to Usefulness.

The first effort is always to get rid of the contents of the root-canals. Wherever possible the rubber-dam is adjusted, and where necessary a temporary wall of wax and gutta-percha built to restore the broken one, so as to be enabled to place a few drops of sulfuric acid into the pulp-chamber and pump it with the fine broach clear to the end of the canal. This treatment is followed by neutralizing with bicarbonate of soda.

Next comes the drilling out of the root-canals. Commence with a larger sized Gates-Glidden or Morey drill, and sometimes with Dr. Williams' root reamer, and follow by the smaller sizes as required, the aim being to reach the end of the canal. Often I am successful, but sometimes in the very fine canals I do not get quite to the end. I go as far as I can safely. The trouble which might result from leaving a short end not drilled is discounted by a little treatment before drilling into these fine canals. I take a fine broach and moisten it just enough so that finely pulverized nitrate of silver will cling to it; this I work into these canals clear to the end, care being taken not to bring it in contact with the walls of the tooth, and then take my chances on the drilling, stopping when sensitiveness makes it prudent to do so. The aim is to drill the canals as thoroughly as possible, removing all soft or disintegrated tissue which in any manner might be susceptible to decomposition or give a poor foundation for cutting a thread to receive a screw. The canal is then enlarged or finished to the proper or desired size by a Gates bur. Of these I have enough sizes to correspond with a set of taps and dies, and with Nos. 12 to 18 of U. S. wire gauge.

A thread is cut into the canal with a suitable tap, and on the corresponding wire with the die. I have been using hard platinum, but of

late have used Ash & Sons' alloy, which can be obtained in sizes of U. S. standard gauge. The drilling of the canal is often carried to such an extent that a bicuspid root, or even a molar root, will sometimes receive a screw cut out of Nos. 12, 13, or 14 wire U. S. standard. The taps I have had also cut off and arranged so they can be worked in any part of the mouth. The screw, when cut, is placed between two blocks of wood and a thin groove cut into its entire length the depth of the thread.

The roots being now ready to receive the screw, the further treatment varies somewhat, according to the success achieved in drilling the canals and other peculiarities of the case. In roots drilled to the end I pack cotton steeped in oil of cinnamon or oil of cloves. In roots where the end has not been reached I place at the bottom of the drilled portion a little cotton moistened slightly and dipped in powdered nitrate of silver, and then seal up the tooth and wait a few days or a week. The drilled portion of the root facilitates the placing of the medicaments and the pickling and impregnation of what remains of it. The nitrate of silver sometimes causes slight soreness, but I seldom have a case where it does not disappear in a few days. Of course, it is not necessary to pack a large quantity; a little will go a long way, and overtreatment must be guarded against. Should the soreness be of a very severe nature I reopen the tooth and pack with oil of cinnamon in which some crystals of cocain are crushed, and I have yet to see the first case in which the soreness did not disappear in a very short time. If a blind abscess is suspected I proceed in precisely the same way. I have had cases where there existed for more than a year a large, hard swelling over the root of a molar or bicuspid with no established fistula, but under this treatment it subsided entirely. Should, however, a fistula appear subsequently I take a fine broach, wrap a little strand of cotton around it, moisten very slightly, dip in pulverized nitrate of silver, and with it wipe out the entire tract of the fistula, and rarely do I have to apply it a second time; it will almost always heal readily, and seldom appears again; that is, where the roots have been previously treated as stated.

Of course, there may result some pain from this treatment, and especially if too large a quantity is used; as already stated, a little will go a great ways.

In extreme cases of soreness and pain a topical application to the gums, consisting of ether and alcohol in which are dissolved menthol crystals and a few crystals of cocain, will give almost immediate relief, and is far more effective than a dozen boxes of pepper plasters. It is a most valuable application in any kind of pain, whether such pain is the result of extracting a tooth or the setting of a crown or other pericemental inflammation. It is applied on little plasters made of rubber cloth on one

side and felting cloth on the other, stuck together by means of gum-tissue, which is obtainable at any rubber store. The felt side is moistened with two or three drops of the solution and applied to the gums; the solution is renewed once in a while. A one-dram bottleful and a couple of of the pads is all the patient requires.

Whenever the proper medication can be forced through root and fistula it should be done. For this purpose I use hydrogen dioxid, and follow it up with oil of cloves. Circumstances vary the treatment, and one rule will not fit all cases.

At the second sitting, which usually follows a week later, the shell is prepared. I need hardly mention here that for the purpose of gaining access to the root-canals all tooth portions in the way of such access were previously removed, and all preparation of the shell left consists in cutting away weak edges, beveling and shortening weak walls, so that the filling-material will protect them. In bicuspid especially I cut away quite a portion of the palatal wall to be recovered or rebuilt with amalgam to receive the blow of mastication against the filling-material and screw. Sometimes a hole is drilled through a wall and a small screw, inserted through it for the amalgam to pack around it. No one rule can be laid down for all cases. The screws are now put in place. The canals are, of course, first dried in the usual manner, then a little cement, to which is added about twenty per cent, of powdered hydronaphthol, is mixed to proper consistence. This is worked into the canal; the screws are also covered with it, and then screwed into place, the groove in the screw permitting the escape of the excess of cement. Only a small quantity of cement is required. The open ends of all canals are always first closed with a small bit of pink gutta-percha. Without waiting for the cement to set, the amalgam is packed around the screws, care being taken to push the surplus cement against the labial walls, especially so in a bicuspid, so as to prevent as much as possible the discoloration that amalgam might bring. Contour is always practiced, the screws holding the amalgam so well in place that plenty of time may be taken to build against the adjoining teeth and at the same time trim the cervical edge, and thus prevent the pushing and crowding of the material below the gums. At a subsequent short sitting the filling is polished.—A. RETTER, in *Cosmos*.

Vulcanite Inlays.

Inlays of vulcanized white rubber have been invented by Dr. Arth. Scheur, Dentist, Teplitz. Dr. Herbst, Prof. Miller, Dr. Schlemmer, Mr. W. Dall, and Dr. Jenkins, have made the use of glass and porcelain

inlays familiar. Dr. Scheur claims that inlays of vulcanized white rubber are easier to work and cheaper. To fill a side cavity: Clean it and work it out to cone-shape; brush it over with vaseline and with a Foster-Flagg's instrument fill up the cavity with modelling wax kneaded between the fingers; smooth the outside down with the same instrument, in order to fill up all defects; syringe the wax-filling with cold water; spray a little chloride of ethyl, and remove the filling from the tooth by means of a pin roughened at the end; imbed this wax model in plaster underneath the lid of the flask, and leave the bottom end of the model standing out of the plaster in order to get the wax out by means of hot water; now pack the white rubber into the mould (one may insert a little piece of wire to improve the connection with the cement fastening), and vulcanize; undercut now the edges of the tooth-cavity a little, and insert the rubber inlay by means of soft cement; after the cement has thoroughly set, finish off, and polish with the usual instruments.—*Dental Record*.

Sterilization in Dental Practice.

Sterilization may be defined as the process of destroying all spores and germs, with a view to prevent the development of bacterial or other organisms.

To the surgeon it is not only important to destroy all germs which may have found lodgment on the instruments and appliances employed in his operations in order to prevent the infection of his patient by pathogenic organisms, but also to be scrupulously careful after the operation to prevent their admission or inhibit their growth by the use of antiseptic dressings; in other words, complete sterilization is the "Sine qua non" of the careful surgeon of the present day.

The importance of or necessity for sterilization implies the probable presence of pathogenic bacteria in all cases operated upon. Miller has demonstrated that there are twenty-two mouth bacteria, of these eight or ten are almost constantly met with, and six are invariably present. Besides these mouth bacteria, nearly all of which are non-pathogenic, almost every minute organism which has been described as growing in any position, has been found in the mouth. In other words, the mouth is the typical incubating chamber for the culture of almost all germs. During epidemics or when persons come in contact with those suffering from various zymotic diseases the organism associated with them are frequently taken into the mouth.

Surgeon-General Sternberg, of the United States Army, an eminent authority on bacteriology, states that he has found the pneumo-

coccus constantly present in his own mouth, and that he has repeatedly caused pneumonia, followed by death, in rabbits by injecting them with the saliva taken from his mouth when in a state of perfect health.

Numerous authorities might be quoted substantiating the foregoing statements, but time will not permit. I have thus shown that even in the most healthy mouths, to say nothing of those contaminating by disease, such as tuberculosis, erysipelas, syphilis, etc., there may be present micro-organisms which, becoming attached to our instruments, may by accident or otherwise be introduced into the system of the patient himself or of some succeeding patient, or even of the operator, with calamitous results.

Muir and Ritchie in their Manual of Bacteriology say that all bacteria can be killed either by heat, drying, starvation, or by chemical agents; of these, chemical agents, commonly called germicides, are most frequently used. As a general rule the two chemical agents which heretofore have most frequently been used are a 1 to 20 solution of carbolic acid, and a 1 to 1000 solution bichloride of mercury. But these do not meet all the requirements of a sterilizing agent for a dental office, not only because of the time required in some cases for complete sterilization, but because of the corrosive action on steel instruments, and because some articles would be destroyed by being immersed in these solutions. Many have, therefore, take advantage of the principle that all bacteria are destroyed by heat, and have advocated this method of steilization. This, again, presents disadvantages to the dentist, as the high temperature necessary to kill the spores of some bacilli injures the temper of delicate steel instruments.

The hands of the operator should be washed and disinfected after each operation, not as an act of cleanliness merely, but as a safeguard, for himself and succeeding patient, against possible infection from a previous patient.

My own method after washing, is to apply to the hands a small quantity of borolyptol, allowing it to dry upon the skin.

The mouth of the patient may be rendered practically sterile by use of some one of the many good aatiseptics that are now available. Of these, borolyptol is coming into popular favor. A small quantity held in the mouth for a few minutes arrests the growth of the micro-organisms. Tubes of agar agar planted with saliva from the mouth, after exposure to borolyptol, shows no growth after forty-eight hours incubation, while tubes inoculated from the same mouth before the application just stated gave abundant growth, thus showing that borolyptol has at least the power of inhibiting the growth of mouth bacteria.

With regard to borolyptol, I think it might be safely used for ster-

ilizing instruments, as only a slight tarnish was forced on steel instruments immersed in it for thirty-six hours, but this is longer than is necessary to accomplish sterilization; half an hour's exposure produced no tarnish whatever.—T. C. VANKIRK, in *Dental Brief*.

An Operation to Increase Stability of Artificial Dentures.

Operation indicated when difficulty is experienced in fitting plates, owing to the presence on the ridge of a flatulent, flaccid, movable fold of gum tissue, a condition often met with where the use of vulcanite or other bases has been prolonged after resorption of the alveolar process has taken place, and which, while perhaps not interfering with adhesion of the plate while jaws are at rest, when masticating, owing to the mobility of the ridge, or fulcrum of lever, interrupts vacuum and lever.

Dr. Eshelman's operation consists of carefully protecting lips and other parts with gauze or napkins, leaving part to be removed exposed and dry, then obtunding with ethyl chloride, and exercising with a pair of curved scissors all the flatulent portion, taking care not to completely expose alveolus. Hæmorrhage may be profuse but may be controlled by ordinary methods. Treat antiseptically. If patient is wearing a plate, line same over excised part with antiseptic gauze, often moistening it with some good antiseptic medicament. If not wearing a plate cause to be used frequently an antiseptic wash. Healing takes place rapidly. In many instances impressions may be taken immediately.—B. F. Eshelman, in *Dental Review*.

A Modified Davis Crown Setting.

I have found difficulty in setting any of the crowns now made in the roots of the first bicuspid. The second bicuspid has usually fairly open roots, and often only one canal, but the first is often very puzzling on account of the bifurcations and other complications well understood and dreaded by those who undertake crown setting of any kind on these roots. The Logan crown is well nigh useless in such work, as the pin must either be split, or else set in one root only.

My method with the Davis crown is to prepare the root canals as though for two separate pins. I then make two pins separately, fitting each as though it had no special relation to the other. A disk of thin platinum (about 34 or 36) is prepared, holes punched in this, the disk and pins fitted to place, and the pins soldered securely to the disk.

Usually it will be found that the pins may be brought together, so as to make a projecting single pin on the crown side of the disk. Sometimes the pins may be manipulated by doubling the platinum or other wire on itself so as to form a staple, the part of the staple away from the points being brought in contact, and forming the pin which is to enter the hole in the crown.

The parts soldered, the pins and disk are placed in position, the edges trimmed, and the crown ground, fitted and articulated. The roots being filled with gutta-percha, the pin with attached disk can be heated and forced into place, the crown tried on, and this last attached with cement.

The advantages are: The making of the pins to fit each root accurately; the ability to perfectly adjust the disk to the end of the root; the opportunity to see the work at every stage of its progress; the attachment of the pin to the root with a material which can be softened and removed at any time; and the opportunity to renew the crown in case of loss. If it be deemed desirable to band the root, this can be done, but it is, in many cases, not best. The advantage of not having a cement joint against the root is obvious.—J. B. HODGKIN, in *Items*.

Pulp Devitalizer and Pulp Devitalization.

The following is our formula and manner of applying it:

R.—Acidi arseniosi pulveris, ℥j;

Morphinæ acetatis, gr. v;

Aluminis pulveris, gr. x;

Creasoti B. W., gtt. x.

M.—Fiat massa.

After cleaning out the cavity as well as possible without causing pain,—do not expose dental pulp if not already exposed by decay,—take as much of the mass as will equal the size of a common pin-head; lay this on a small pad of cotton previously dipped in creasote; place this in the seat of decay with the arsenic at the nearest point to the dental pulp and press it gently to position; then pack the cavity not quite full with loose cotton, being careful to so place it that pressure is not made upon the nerve.

On this place a piece of paraffin, seal it with a hot instrument, and dismiss patient for twelve or twenty-four hours. To remove dental pulp clean out the cavity, test for vitality with a stream of cold water from a syringe; if no thermal response is given make free access to the pulp-chamber and pass a broach well up the root-canal.

If the action of the arsenic has been confined to the body of the dental pulp the patient will experience a slight pain as it approaches the apex; then withdraw broach until pain ceases; give it one or two turns to snare the dental pulp; tell the patient to make a rapid inspiration through the mouth, and with a quick action remove it.

If the dental pulp responds to the cold water test seal the cavity and dismiss the patient for twelve hours, or more if found necessary. In no case ever make a second application of arsenic, for when once applied it will accomplish its deadly work if sufficient time is given.

Never hesitate to make an application to an inflamed dental pulp, as we have found that, instead of increasing the pain, it will soothe and quiet it immediately in nine out of ten cases. Before making it moisten cavity with warm water.

If through the carelessness of patient or other cause, when the patient returns to the office the tooth is found sore to touch, or the peridental membrane is inflamed, paint the neck of the tooth with liquid dialyzed iron; pack the root-canal with cotton dipped in the same solution, seal cavity, and dismiss patient for twenty-four hours.—W. A. MILLS, in *Cosmos*.

The Secret of Success in the Treatment of Pulpless Teeth.

This can be summed up as follows:

First.—Perfect sterilization of surrounding teeth and the one to be operated on.

Second.—Making the proper approaches to the pulp chamber and the careful opening of canals.

Third.—Avoiding the introduction of micro-organisms into the apical third.

Fourth.—The thorough sealing of the foramen with an aseptic-plug possessing anodyne, nutrient and anti-phlogistic qualities.

Fifth.—Filling the middle third with an insoluble cement.

FORMULA OF PASTE.

Talcum, dram I.

Boric acid, Grs. XX.

Salycilic acid, Grs. V.

Iodide Crystal, Grs. I.

M. Bene et adde.

Ol. cinnamon q. s. to make paste.

Sig. One drop applied to root-canals.

—A. E. BLAKE, *Med. Dental Gaz.*

Absorption of Roots Due to Abuse of Ligatures and Clamps.

We have frequently referred to the mischief done to the gingival margin by the abuse of the rubber dam, ligatures and clamps. Recently we met with a unique case of the absorption of the roots of the six anterior permanent teeth, due, we believe, to the same cause. The ordinary causes, such as the pressure of unerupted teeth, transplantation, immediate torsion in the treatment of irregularity, and blows were entirely absent. The patient had undergone six successive and severe operations of contour gold fillings within two weeks. Each time she suffered intensely when the ligatures were forced down on the gum. In three cases clamps had been used. There were no less than thirty-six gold fillings and four amalgam in the mouth, none of which had given any more than the ordinary pain in preparation, and from none of which she had endured the preparatory and subsequent pain of which she complained in the treatment of the anterior teeth. None of the pulps were exposed in the latter. For over a year after the operations the gums were hypertrophied. It seems evident that the osteoblasts became osteoclasts and thus caused the absorption. The six teeth have been lost.—*Dominion Dental Journal*.

How to Use Vapocaine.

We have received a number of replies to an inquiry as to the best method to employ in using Vapocaine. The consensus of opinion shows that the best results are obtained by the following method:

Apply the rubber dam and dry the cavity with hot air before applying Vapocaine. Then place a piece of dry absorbent cotton in the cavity and drop the Vapocaine on this until thoroughly saturated. Leave this in from two to five minutes, keeping the cotton saturated until ready for operation. A zone of profound anesthesia is produced. It is preferable to cover the cotton with a piece of rubber in order to prevent too rapid evaporation of the ether.

Sharp burs are necessary or the heat produced will extend beyond the zone of anesthesia, particularly in hard teeth, and overcome the effect of the obtunder. A portion of the decayed dentine should be first removed and the Vapocaine reapplied. This process clears away the lime salts and other products of decay, which block the dentinal tubuli and prevent perfect penetration, and allows the Vapocaine to permeate the whole truth structurē.

It may be pointed out, however, that suggestions regarding technique are not always applicable. The skill of the operator will in most cases be more available than any set form of instruction.

BRIEFS.

Crown Polish.—Oxide of zinc is a good polisher for a crown.—*Review.*

Strip Lubricator.—Dr. Brunton advises a little French chalk placed on the back of polishing strips to lubricate them.

Beware of the Continuous Use of Corrosive Acids.—Many cervical cavities are started in this manner and others are extended.—*Review.*

To Clean Oil Stones.—It is said that a few drops of glycerin and a little pumice powder placed on the stone and well rubbed on will soon make it perfectly clean.

For Grinding Roots.—When a root stands alone the carborundum stone will answer for the distal surface, but the bur is better adapted to the mesial if properly used.—*H. J. Goslee, in Review.*

Polishing Fillings.—Keep a cake of calcined magnesia in the cabinet and when the last disk of cuttlefish is used touch it to the cake and give a brilliant polish to the filling.—*Dental Hints.*

Saline Water as a Solvent for Hypodermic Medicaments.—If the active medicine for hypodermic injection is dissolved in saline water instead of plain water, it is less painfully injected and more potent.—*Exchange.*

A Hint on Extracting.—After extracting abscessed teeth, always syringe the socket with hot water and an antiseptic, especially in the lower jaw, where pus may remain in the socket after extraction.—*Dom. Dental Journal.*

How to Sterilize Eucain.—Dr. A. H. Peck says that he has conclusively proven that eucain can be sterilized by boiling without injuring its anesthetic properties, but that the usefulness of cocain is destroyed if the solution be boiled.

Where to Use All-Gold Dummies in Bridge-Work.—Where the bite is very short it is better to form the dummies *entirely of gold*, because if the porcelain veneers be ground so close to the pins they will surely be fractured in mastication, however well they may be protected by solid tips. This is also the case where the muscles of mastication of the patient are powerful, which would bring more than ordinary pressure on the dummies.—*T. F. Chaupein, Dental Off. and Lab.*

How to Preserve Rubber Dam.—The way in which I have kept mine is to roll it up, place it in a tin box, and put it in the safe, where it is cool and dark and away from the air, and I find it just as good in a year as it was the day I put it in. I have kept it that way for a good many years.—*Dr. Stevens, International.*

Alpha- and Beta-Eunol.—These two preparations, employed in the antiseptic treatment of wounds, are combinations of eucalyptol and alpha- and beta-naphthol respectively. They are obtained by dissolving the naphthols in equal weight of eucalyptol. Alpha-eunol crystalizes well, and may be purified by soldering.—*Pharm. Post.*

Second Soldering.—Place a piece of lower karat solder than was used on first soldering in mercury until the surface is slightly amalgamated. It will then flow very readily, while the appearance of the finished piece is not injured, as the mercury is sublimated in the heating, leaving the finished piece as it originally was.—*American Dentist.*

Solvent for Celluloid.—Sulphuric ether 75 parts, with rectified spirits 25 parts. Allow to stand in a well corked bottle for several days, with frequent agitation. Cut the celluloid into small pieces. One or two parts of celluloid to fifty parts of the above mixture will produce a saturated solution that should answer the purpose required.—*The Dentist.*

Bridge-Work a Failure.—The objection to the system of bridging is that but few of even the best dentists are capable of performing the high class of work necessary to make it successful. It has been used in practice sufficiently long to show that there never was a more signal failure in any line of work, not even copper amalgam.—*W. G. A. Bonwill in Items.*

Do Not Use Steel Wire on Regulating Appliances.—Dr. H. J. Goslee says he does not think steel wire should ever be placed in the mouth for retaining purposes as advocated in open tubes that are on the adjacent teeth to the one moved, because its susceptibility to oxidation makes it so irritating that the tissues coming in contact with it are always constantly inflamed.

To Make a Thin Disk.—To make thin rim disks at a moment's notice, place a disk on the mandrel in the hand-piece and revolve it rapidly, at the same time holding an instrument against the part nearest the mandrel and gradually passing it outward to within about one eighth of an inch of the edge. This wears off the grit on the central surface of the disk, but leaves fresh grit on the rim.

Instrument Sterilizer.—This Thiersch's solution, which I use for sterilizing instruments, etc., is composed of:

Salicylic acid	2 parts.
Boric acid	12 parts.
Distilled water	1000 parts.

It is found to be very effective, and its cheapness recommends itself to those who use a great deal of antiseptic fluid.—*J. D. Patterson, West. Dental Journal.*

Pulp-Stone Diagnosis.—To diagnose pulp-stone is not very difficult:

1. Such exertion as will increase the action of the heart will aggravate the trouble.
2. Sounding the tooth with a steel instrument will give the same result as incipient periostitis.
3. Sudden closing of the teeth indicates periostitis.
4. Closing teeth and biting hard is not painful and proves that periostitis is absent.
5. Lateral pressure does not give pain as it does in periostitis.—*E. T. Payne in Welch's Magazine.*

Pulps Should be Destroyed in Anchorage Teeth.—In regard to the anchorage of bridges upon teeth with live pulps I have made many bridges in that way, and I am forced to say, in the light of my best observation, while many of them have given no trouble, I am sorry as a whole that I did not destroy every tooth-pulp to which I attached a bridge. I think the destruction of the pulp will enhance the lasting qualities of the tooth, if the root is well filled and the work is well done, and your work will be more permanent. When the time of disintegration comes, if it does come, it will be very much hastened and give you endless trouble where you have endeavored to save one live pulp in a bridge.—*C. E. Esterly, Western Dental Journal.*

Soldering Facings Without Investing.—This is a very useful and time-saving procedure, oftentimes in cases where the facing may be retained in its proper relation without an investment, and can be accomplished without danger of fracture of the porcelain, if placed upon a charcoal block or asbestos pad before applying heat. This so modifies the volume of heat at first that it is no more readily absorbed by the pins than by the porcelain, which enables both substances to expand together. Where the facing is placed directly into the heat from a Bunsen burner, however, the danger is increased, because the metal pins are a better conductor and absorb and expand under the influence much quicker than the porcelain.—*H. J. Goslee, Review.*

Care Necessary in Filling Teeth for Young People.—In operating for young people, the thinness of the mass of dentin must constantly be borne in mind. Often it is better to make a temporary filling of some non-conducting material until the odontoblasts have completed the formation of dentin and protected the pulp. It is also true, however, that the pulps in young teeth have much more vitality before their function is completed than they have later, and consequently will tolerate metal fillings which are separated from them by only a thin layer of dentin better than they will after the normal formation of dentin is completed, the new formation of dentin rapidly interposing a non-conductor of natural origin. Of course, unless the filling is perfectly tight, the pathological conditions of the cavity are in no wise altered.—*F. B. Noyes, in Cosmos.*

The Necessity for Dense Fillings.—It has been estimated that in the proper mastication of an ordinary meal an individual will make at least one thousand occlusions. Supposing that the force of one-half or even one-fourth of these falls on a certain tooth, the number of impacts on that tooth in the course of a twelvemonth is seen to be very great. Multiply this by the number of years such a tooth is likely to be called on for service, and the sum becomes well-nigh appalling. The force of these impacts varies in different mouths, and there is also a considerable range in the degree required for the comminution of the different kinds of food material in the same mouth; but the lowest force necessary for ordinary mastication is at least great enough to become an important factor in determining the degree of density required of a filling against which it is brought to bear.—*C. N. Johnson, in Cosmos.*

How to Take a Sectional Impression of Tooth for Shell Crown.—When a very accurate die is required, on which to form a shell crown, a *sectional impression* of the tooth may be made from the plaster tooth as follows: The plaster tooth is marked with a pencil, dividing it in half. Wax is softened, formed into a roll like a lead pencil, and wrapped around the plaster model of the tooth and brought up squarely to the pencil mark with the warmed wax spatula. The model and wax are now oiled and plaster poured over both. When hard the wax is removed and depressions or guides made into the plaster on the rim which rested next the wax. This is then varnished and plaster poured over this. The two sections are then separated from the plaster model and fusible metal poured in. This yields a perfect reproduction of the plaster model on which the shell crown may be formed.—*T. F. Chupein in Off. and Lab.*

Re-Heated Amalgam in Combination with Cement.—The only way to utilize re-heated amalgam in combination with cement is to heat the amalgam button and mix the cement simultaneously, and immediately incorporate the amalgam with the cement mass. This procedure gave a grey mass, which retained the adhesiveness of the cement, set hard in the same time as the cement, and burnished within ten minutes of its introduction to a fine metallic lustre.

The proportion of amalgam to cement may be varied according to the fancy of the operator, the masticatory strain the filling is destined to bear, and the size and shape of the cavity. I heat the amalgam in a copper-amalgam spoon, mixing the cement at the same time. The amalgam should be in little pieces, not bigger than No. 6 shot, and I fancy the older tis the better. Absolute dryness is an essential condition to success and I should say it was futile to try this combination without the rubber dam.—*Dental Record*

To Prevent Teeth From Cracking When Soldering.—Before a tooth is backed, the holes in the *metal backing* should be countersunk on both sides. This allows for any irregularity of mineral round the pins of the tooth, which would prevent the metal backing if not countersunk fitting quite flush, and, consequently, much endanger the tooth during the process of riveting

The pins should only be riveted sufficiently to secure the backing and prevent the tooth shifting. If riveted too tightly the tooth will invariably crack under fire owing to the expansion of the metal. Whenever possibly we recommend bending the pins in preference to riveting.

The best method of heating-up previous to soldering is to place the case as invested on Fletcher's Plate Dryer and Heater, or in a furnace, and carefully heat it up to a dull red before applying the blow-pipe. This will also prevent warping of the plate on account of its being equally heated throughout. Care should be taken to give only sufficient heat to make the solder flow.—*Ash's Quarterly*.

New Publications.

THE PRACTICE OF DENTAL MEDICINE. By George F. Eames, M.D., D.D.S., Professor of Pathology and Therapeutics in Boston Dental College; Member of the Massachusetts Medical Society, and of the American Medical Association; Ex President of the Massachusetts Dental Society; Member of the

American Academy of Dental Science; Honorary Member of the Maine Dental Society, etc. Containing thirty-eight engravings and three colored plates. Published in America by the S. S. White Dental Manufacturing Co., Philadelphia, Pa., and in England by Claudius Ash & Sons, Limited, London. Price \$2.75 net.

The author states that it would seem that the time has come when the dentist should possess formulated rules and methods of practice in the medical treatment of dental cases. The effects of certain disorders upon the teeth and other oral structures are being better understood as time goes on, and their influence of their local pathological conditions in the mouth upon other organs and tissues are in like manner being better comprehended; therefore the advanced teaching of to-day should give these subjects the consideration which their importance demands. This book is an endeavor to accomplish the task thus indicated.

The subjects discussed, as shown by the contents, are:

General Considerations in Pathology; The Inflammatory Process in General; Syncope; Hysteria; Neuralgia; Consideration of Subjects Involved in the Administration of Anesthetic Agents; Menstruation; Pregnancy; Hemorrhage; Constipation; Swallowing Plates and Other Foreign Bodies; Stomatitis; Diphtheria; Scurvy; Rhachitis; Scrofula; Chancroid, or Soft Chancre; Syphilis; Rheumatism; Dyspepsia; Tetanus; Gingivitis; Pyorrhea Alveolaris; Phagedenic Pericementitis; Difficult Dentition; Salivary Fistula: Salivation; Ranula; Dental Caries; Hypersensitive Dentin; Hyperemia of the Dental Pulp; Acute Pulpitis; Chronic Pulpitis; Suppuration and Abscess of the Dental Pulp; Pericementitis; Dento-Alveolar Abscess; Dental Erosion; Abrasion; Hypercementosis; Secondary Dentin; Pulp Nodules; Necrosis; Ankylosis of the Jaw; Empyema and Other Pathological Conditions of the Maxillary Sinus. Hypertrophy of Adenoid Tissue in the Post-Nasal Space; The Relation of Adenoid Vegetations to Irregularities of the Teeth and Associate Parts.

While the book is not confined strictly to what is generally termed dental medicine, yet the majority of subjects treated are either general diseases having local expression in the mouth, local, affecting the soft tissues of the mouth or the dental and surrounding bony tissues, or diseases affecting the adnexia of the mouth.

No book in dentistry covers the subjects as here presented

and the classified etiology, pathology, diagnosis, treatment, etc. make it a valuable work for study and reference.

It has the characteristic clean typographical appearance of all the books published by the S. S. White Company.

CHEMISTRY AND METALLURGY APPLIED TO DENTISTRY. A manual of practical Chemistry and Metallurgy for the Dental Student and for the Dentist. By Vernon J. Hall, Ph.D., Professor of Chemistry and Director of the Chemical Laboratories in the Dental School and in the Woman's Medical School of Northwestern University. Price \$2.00. The Technical Press, Publishers, Evanston, Illinois.

This book is not offered to the dental student as an exhaustive treatise on chemistry and metallurgy, says the author, but rather as an outline of information which it is hoped will give him a practical knowledge of those facts having an unquestionable important bearing upon dentistry.

Part First deals with the metals, descriptive details and qualitative chemical analysis.

Part Second is devoted to chemical technology applied to dentistry, treating of alloys, their physical and chemical properties, and preparation, apparatus, such as balances and weights, furnaces and accessories for testing amalgams, measuring, urine analysis apparatus, etc.

Refining gold, silver, mercury. Treatment of clean and mixed scrap gold and of sweepings; treatment of scrap silver and waste dental amalgam; removing impurities from mercury.

Dental amalgams and alloys testing, etc.

The assay of amalgam alloys, solder and soldering.

Dental-cements.

Analysis of teeth, urine, and saliva.

The absence of the smatterings of organic, physiological and pharmaceutical chemistry, which are so often given in text-books of medical and dental chemistry, is a conspicuous feature of this book.

The subject matter is well condensed and contains much useful information, especially the subjects of amalgam, alloys and cements.

A number of original methods are advanced in part second

and the text is arranged according to the author's method of teaching chemistry to dental students.

The book is typographically neat, well printed and bound.

"THE HYGIENE OF THE MOUTH," by R. Denison Pedley, F.R.C.S. Ed. L.D.S. Eng., Dental Surgeon to the Evelina Hospital for Sick Children, Southwark. London: J. P. Segg & Co. Philadelphia; The S. S. White Dental Manufacturing Co.

This is a work full of valuable suggestions to the students upon this branch of dental science.

Chapter 1 contains the hygiene of the mouth in children, in the home, in the school, in the hospital; the relationship between dental and other diseases.

Chapter 2 contains the hygiene of the mouth in adults, divided into signs of caries in teeth, and their results; exposed pulps; alveolar abscess; the loss of teeth; the effects upon other teeth; the effects of carious teeth upon the general health, and the methods of treatment; general summary.

The author starts out with a description of the diseases of childhood, presenting the various phases of affections to which they are subject, discussing each of these in respect to conditions, etiology and treatment.

The section devoted to the hygiene of the mouth of adults gives a brief description of dental caries, its progress, complications, and treatment; the disadvantages following the loss of teeth, and the effects upon remaining teeth; the influence of neglected mouths upon general health, and cases in practice bearing upon these remarks. Prophylactic treatment is also gone into, formulæ for dentifrices and mouth lotions are given, and general rules for preparing the mouth for artificial teeth are touched upon.

Altogether there is much information in the book for the general practitioner.

INTERSTITIAL GINGIVITIS, OR SO CALLED PYORRHEA ALVEOLARIS. By Eugene S. Talbot, M.D., D.D.S. Large octavo, 192 pages. With seventy three illustrations. Philadelphia: The S. S. White Dental Mfg. Co., 1899. Price, cloth, \$3.50 net.

In this valuable and interesting work the introductory por-

tion contains a full history of the literature and theories advanced as to the cause of this disorder. The structures involved are next studied anatomically, histologically, and biologically. After which the author's own studies, both clinically and in the laboratory, are given, and are supplemented by the work of several colleagues associated with him in special research work upon different branches of the subject.

Regarding the uric acid hypothesis, so well-known to the profession, Dr. Talbot claims that it is losing its force. That the influence of uric acid, when present, is exerted as a local irritant and not as a constitutional factor in the disease.

He does not believe that there is any specific germ capable of producing the disease, but that the pyorrhoea stage of the disease is merely a complication due to pyogenic germ infection of the already diseased gums. Among predisposing factors he mentions the nature of the structures affected (local predisposition), the influence of toxic agents (mercury, potassium iodide, etc.), influence of the constitutional conditions upon the nerves governing local blood supply, and tissue waste and repair, as in cases of scurvy (where the constitutional factor is most prominent), and with the great neuroses (paretic dementia, locomotor ataxia), etc.

The influence of degeneracy expressing itself along lines of least resistance appears as an ominously important factor, but heredity, he says, is a warning rather than a destiny.

The influence of the nervous system on the processes of growth and repair, utrophic function, has been shown to play a part in both the etiology of the disease and in its progress.

The pathology of the disease has been discussed in the light of established facts of general pathology, which have been accepted by the leading dental investigators, and not merely from a hypothetic standpoint. The disease has been regarded as a local exaggeration of certain physiologic processes, accompanied by diminution of the intensity of others. In the study of this phase of the question, the latest researches of dental pathologists, as well as original observation and experiment, have been employed. The author's original researches and studies of the changes taking place from the initial stages of the disease to exfoliation of the teeth, are interesting and valuable, and can be studied with profit by all practitioners. It is a valuable work and must be read to be appreciated.

The many photo engravings used to illustrate the text are good and the typography and presswork excellent.

AN EPITOME OF THE HISTORY OF MEDICINE. By Roswell Park, A.M., M.D., Professor of Surgery in the Medical Department of the University of Buffalo, etc. Based upon a course of lectures delivered in the University of Buffalo. Second edition. Illustrated with Portraits and other Engravings. Extra Cloth, \$2.00 net. The F. A. Davis Co., Publishers, 1915-16 Cherry Street, Philadelphia.

That a second edition of this work should be called for within a year after the appearance of the first, shows its value.

Dr. Roswell Park is an entertaining writer, and has given an epitome of medicine from the Hebrews, Egyptians, Orientals, Chinese and early Greeks, down to the present day in a style that should interest every reader. He has included a short history of dentistry and anesthesia.

The book contains many quaint illustrations, and also engravings of many noted men of the medical profession.

TRANSACTIONS OF THE NATIONAL DENTAL ASSOCIATION, 1898. The book is gotten out in the usual style and includes proceedings of both the National Association and the Southern Branch. S. S. White Co., Publishers.

PAMPHLETS RECEIVED.

WHAT BECAME OF THE DAUPHIN LOUIS XVII? A study in dental jurisprudence by Eugene S. Talbot, M.D., D.D.S.

THE ETHNOLOGY OF THE TEETH, by Alton Howard Thompson, D.D.S.

COSMOS AND EVOLUTION, by W. C. Barrett, M.D., D.D.S. A lecture given to the students of the Chicago College of Dental Surgery, 1899.

ANNOUNCEMENT: The Helman-Taylor Co., announce an early issue of a book entitled: Facts, Fads and Fancies about Teeth, by Henry L. Ambler, M.D., D.D.S., dean of the dental department, Western Reserve University. Price of the book will be \$2.50.

SOCIETIES.

Board of Dental Examiners of the State of Ohio.

THE next meeting of the Board of Dental Examiners will be held in Columbus, Ohio, beginning the last Tuesday in November. Applicants for examination should secure blanks and make all arrangements by November 20, 1899.

Address L. P. BETHEL, Secretary,
Kent, Ohio.

Ohio State Dental Society.

THE next meeting of the State Dental Society will be held in Columbus, beginning the first Tuesday in December. A most excellent program is being arranged and the meeting promises to be the most interesting and profitable one of recent years. Program will be given next month.

The International Congresses of the Exposition of 1900.

INTERNATIONAL DENTAL CONGRESS.

THE National association of French Dentists have organized an International Congress to be held, under the patronage of the French Government, during the Universal Exposition of 1900. Similar Congresses were held during the Paris Exposition of 1889 and at the Columbian Exposition at Chicago in 1893. The principal Dental Societies of the entire world will be represented. The date has been fixed to the seven days from the 8th to the 14th of August, 1900. Immediately following the two important Congresses—Medical Ethics (practitioners) and the Medical Congress proper.

The work of the Dental Congress will be divided into eight sections:

1. Anatomy, Physiology and Histology ;
2. Special Pathology and Bacteriology ;
3. Operative Dentistry and special Therapeutics ;
4. General and local Anesthesia ;
5. Prothesis, Dental Orthopædia and Facial restorations ;

6. Teaching and History of the Dental art ;
7. Legislation, Jurisprudence, and Professional Ethics ;
8. Hygiene, Public Dental Service.

Two sorts of communications will form the matter of discussion of Congress ; first, those received in advance by the Committee, for the preparation of reports in each section ; second, subjects chosen by the authors (the latter papers may be written in French, English, German, Russian, Italian, or Spanish—only the conclusions must be in French). There will also be practical demonstrations by operations either of operative dentistry or of dental prosthesis, and the exposition of new instruments.

The condition of membership for the Congress are the legal right to practice dentistry, honorable exercise of the profession, and the recommendation of the National Committee. The Organizing Committee will also consider the applications of persons not exercising the profession. Members who desire to present communications to the Congress should give notice to the Secretary General at least three months before the opening of the Congress. With this notice they should send the text of the conclusions which sum up the paper ; and these conclusions will be translated into French by the Committee.

The subscription for membership is twenty-five francs, giving a right to all the privileges of the Congress. Subscriptions should be sent to the Treasurer, M. Viau, 47 Boulevard Baussmann, Paris. Communications are to be addressed to the Secretary General, M. le docteur Sauvez, 17 rue de Saint-Petersbourg, Paris.

International Dental Congress, Paris, France, August 8 to 14, 1900.

THE committee appointed by the National Dental Association, at the Omaha meeting, August 30, 1898, was, by order of the chairman, Dr. A. W. Harlan, convened at the Cataract House, Niagara Falls, August 1st, 1899. No quorum being present, was adjourned to the 3rd inst., at 4 P. M.

There were then present, A. W. Harlan, of Chicago ; H. A. Smith, Cincinnati ; Thomas Fillebrown, Boston ; T. E. Weeks, Minneapolis ; J. D. Patterson, Kansas City ; H. W. Morgan,

Nashville; T. W. Brophy, Chicago; W. C. Barrett, Buffalo; W. W. Walker, New York City; W. E. Griswold, Denver, Colo.; B. Holly Smith, Baltimore; J. Taft, Cincinnati, O.

The meeting was called to order by the chairman, who gave a short address, stating the object, organization, etc., of the congress, and the work necessary for the committee to accomplish in this country.

On motion of Dr. Weeks, W. E. Griswold was elected secretary.

On motion of Dr. Fillebrown, Dr. Wm. Jarvis, of Brooklyn, N. Y., was elected an additional member of the committee.

On motion of Dr. Smith, the chairman and secretary were instructed to confer with the National Association in regard to arranging an earlier meeting next year to accommodate those going abroad.

On motion of Dr. Weeks, H. S. Sutphen, of Newark, N. J., was made a member of this committee.

On motion of Dr. Barrett, a place on this committee was reserved for the President of the National Association, in the year 1900, and the chairman was authorized to insert his name.

On motion of Dr. Brophy, George H. Chance, of Portland, Ore., was made a member of this committee.

On motion of Dr. Barrett, a resolution requesting any member of this committee, finding himself unable to go abroad, to attend this congress, shall at once resign, and that the Executive Committee be empowered to fill the vacancy, was passed.

On motion of Dr. Smith, the chairman was requested to appoint a transportation committee, composed of Dr. Jarvis, Dr. Walker, Dr. Harlan and Dr. Griswold.

On motion, a committee, consisting of Dr. Brophy, Dr. Weeks, Dr. Morgan, was appointed to take charge of the exhibit of American educational methods.

On motion, an executive committee of five was appointed, consisting of Dr. A. W. Harlan, chairman; Dr. Barrett, Dr. Brophy, Dr. E. C. Kirk, and Dr. H. A. Smith.

On motion, the Executive Committee were empowered to fill vacancies in this committee.

On motion, adjourned to meet at call of chairman.

W. E. GRISWOLD, *Secretary*,
423 Mack Block, Denver, Colo.

THE OHIO DENTAL JOURNAL.

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CONTRIBUTIONS.

Compulsory Prophylaxis, with Industrial Aspect.

BY S. D. STEWART, D.D.S., CLEVELAND, OHIO.

THERE has been for years, in fact ever since the introduction of phosphorus, as an element in match-making, a disease called phospho-necrosis, (phossy jaw) vulgar English, with which certain of the match workers are liable to be afflicted. Not always those, however, whom we call composition mixers, to the exclusion of either the packer or wrapper. The mixer and packer are certainly equally the same exposed to conditions which may, sooner or later, from some one or more of the many "exciting causes" develop into phospho-trouble. Phospho-necrosis is superinduced, it is claimed, by the direct or indirect action of phosphorus or its resultants, in some form. It manifests itself in the maxillary bones, sometimes extending from the superior maxillary to and involving the malar bones. This, if the case had been taken charge of in an earlier stage, would rarely, if ever, occur, if properly handled. We have seen several cases of this nature. As a rule, when this latter stage is reached, the pathologic conditions become very grave, not only resulting in great disfigurement of face, but many times fatally.

* Paper read before the Cleveland Dental Society, April, 1899.

The editor and publishers are not responsible for the views of authors of papers published in the OHIO DENTAL JOURNAL, nor for any claims that may be made by them.

Surgery has in past years played a most important part as a remedial agency in the treatment of this trouble, and no doubt can never wholly be overcome, but it has now become rather a secondary consideration or a last resort as a remedial. We hardly consider it presumptuous when we say our experience has fairly demonstrated the truthfulness of this statement. We hope it may be more fully demonstrated to you in the near future, that there is a truer line of action in the treatment of these unfortunate cases and one thoroughly philosophical.

The first important steps to be taken in the right direction to relieve this distressing trouble, and very undesirable condition, relates to factory sanitation and better hygienic surroundings, viz : greater cleanliness in factory and workers, ample and complete lavatory facilities, sufficient convenient sanitary closets for men and women, increasing per capita the quantity of pure air and working space of employes, and well lighted and heated rooms, with the whole factory as clean as your home. These were most important and valuable adjuncts for the betterment of the operatives.

There has been no let up in this effort to free the match employees of this trouble; each year adding or doing something toward relieving the situation. They have also very materially reduced the per centage (in weight) of the phosphorus used in making composition. I understand it has been reduced to the minimum. I am now speaking more particularly of the company to which I have the pleasure of being associated. With your forbearance and without in the least wishing to obtrude our knowledge of certain facts upon your mind at this time, we wish permission to say this (for it is due the Diamond Match Company in the noble humanitarian efforts they have made in this direction) that the company not only has done, but still is doing, all that money, suggestive advice, the introduction of most valuable mechanical sanitary mechanism in manufacture can do, to eliminate the phospho-trouble, as well as better the general conditions of each employe in all their great factories. This is all brought about voluntarily. There is, as yet, no legal obligation to do thus, as is supposed to be in some foreign countries. My object in thus alluding to the solicitude which this company manifests for their employes, is to give a comparative illustration of what might be done, and yet is not done to anything like the degree it should

be, in the great industrial institutions of the world. (I would like to say here, if time permitted what I think of the financial returns upon an investment of this kind).

In no country in the world are there such model match factories, and carried on upon such a liberal humanitarian spirit, voluntarily, as we have in our republic.

Referring to the incipient history of our association with the Diamond Match Company in their primary efforts to rid themselves of phospho-necrosis, several years since we had introduced a form of certificate, which employes who had work done in the mouth, and later those who applied for work, were obliged to bring with them, indicating whether the mouth was in a fit condition for them to go to work, signed by a dentist and filed in the office for future reference. We examined many mouths and gave certificates for entrance to factory when we thought there was no special risk. Our advice upon hygienic and sanitary measures was sought later, and I will say that everything suggested was immediately adopted and put into practical test; thus, our indirect connection with the company ran along many years, during which time we had suggested their securing the services of a competent dentist to look over the employes at regular intervals and thus prevent filling up the ranks with unfit material, which later would have to be rejected and replaced by the same kind, and again be rejected. This, we considered would be the most efficient and reliable "prophylactic" measure, to gradually clean out "suspects" and build up a more efficient and healthful "corps" of employes.

About five years since we agreed to take hold of the company's largest factory and give them our services one day each week, for examining the employes, etc. After the first year's experience it seemed to point to the fact that all the factories should have the same advantages in care of employes. The result was the securing of our services for the full inspection of the factories we now have in charge; the adoption of which system evidently had proven a satisfactory test and indicating the wisdom of extending the benefits to all other factories.

There are four factories which we visit regularly, with an aggregate of over two thousand employes. We visit the factories practically four times each year. Should we consider it necessary or desirable to pay an extra visit to any of the factories, as an

extra precautionary measure, we do so. We have an office in each factory, well located as to light, air, convenience of employes and our general comfort. Each employe in the factory is seen during these visits, unless absent unavoidably, from sickness or otherwise. Should they be absent again upon next visit, and their last record was not "good" and "clear," we send for them to come to the office. Should they not come, we either check them *out* or require them, upon their return to the factory, to bring a certificate, stating their fitness to work in the factory, from some responsible dentist, which will allow them to remain until our return and subject to our approval. We thus place a check upon "backsliders," a "doubtful" or "disobedient employe," thereby keeping them well in hand.

Our Manner of Examination and Record.—We examine all parts of the mouth carefully and thoroughly, make a "diagrametric record" of everything to be done "now" or "soon;" take a note of any promise given, or advice given, holding employes to same, and referring to same on following visit. Should there have been any new employes enter the factory since last visit, there is a list of them prepared in their various departments and sent me. We examine these new applicants and new employes. Make a complete diagrametric photograph (as I term it) of the mouth, which is a base for all future comparative references, all the same, should they remain as employes, or never return to the factory again. We also see as well as we may, to general physical conditions of employes, and if we can suggest anything which will better fit them for their work, we do so, and insist upon its being carried out. This is largely diatetic and hygienic in its nature.

We have on our books, recorded, the exact age of each employe. We also get the ages of all applicants, of which we make a record, whether they ever enter the factory or not. You will thus see that our records amount annually to about nine thousand.

Of course, I do no work for the employes. We simply indicate by record and report to the superintendent what must be done, and send them to some dentist whom we have learned, possibly, has been doing "good" work for employes. Sometimes they select their own operator, but we are bringing them up to understand that we are better prepared to advise them on these

matters and insist upon their going where we may direct, upon penalty, if work is not done satisfactory, of their being checked "out." We are very apt to say some "large words" should a poor boy or girl come in to see me, who has honestly complied with our request, so far as they understood it, and we find the work is simply criminal, and we are forced to check them out a second time, and on account of that criminality they are compelled to not only lose more time but pay out more money. There is not any one act, unless it be "chronic disobedience" upon the part of the employe, and not even then do we become so poetic or soar so high on our "high-horse" as we do in a case of such criminal action upon the part of the operator. (You may be surprised at the condition of affairs either in New York, Michigan, Wisconsin and sometimes Ohio). We are frequently compelled to make a professional call upon this "erring brother" and "sing a song of praise" for the lessening of his days in his noble (?) efforts for humanity. This is but an incident unfortunately accompanying our efforts.

We hope you will not for a moment feel that we wish to drag before you, at this time, our personal "felicities and delights." It is rather to illustrate one phase of the antagonism we at present have to encounter with all our precautionary measures. We repeat, our efforts to combat this evil are becoming more efficient each year. We are in this way teaching employes that good work is worth more than indifferent operations, and that it is cheaper for them to pay more for same. This is placing them a step higher on a moral plain.

But the strong arm upon which we relied for success in this unique and new field of action was compulsory, preventive measures. Prophylaxis was the dominating idea. Factory sanitation and limited hygienic measures had been gradually introduced. New economic and sanitary machinery was being constructed, all of which was bettering employes environments, thereby making their work more agreeable and safer.

We now step in and take hold of the most delicate, the most valuable part of the system; that upon which all other parts of an industrial economic system must absolutely depend for its final and full success. It is none less than the most complete and perfect working system of mechanism known to man. Producing results on most economic principles, with least amount of fuel and

waste. A machine, which, in truth, has less care given it, more recklessly operated as to time run and manner of running—and yet this human mechanism, handicapped as it is, is the most perfect and economic machine on God's foot-stool. All other mechanisms—all advance in the arts and sciences—are but manifestations of the inner workings of this wonderful machine. This machinery with proper care, better invironment, proper fuel, can do twice the work, with less friction than can be done with the ordinary environment and conditions existing in the past. It must be initiated and fully prosecuted under strict compulsory rules or laws. In no other manner can you meet with same degree of success in results. If there is any one virtue, more than another, aside from physical improvement, manifested in our line of philosophy, it is the greater economy of effort, both mental and physical, with an additional increased value of the product turned out.

You must understand the necessity and full value of keeping in close touch with the employes, to meet with a more speedy and satisfactory result of the application of compulsory rules of action.

We make it a rule that in each of our factory visits we ascertain positively, if not fully, as to their efforts in their work. Are they satisfied—if not, why not? Are they well? Always encouraging them in their efforts to follow instructions—speaking to them kindly, appreciatively, of any improved condition that we may observe and as being brought about from their own efforts. We, therefore, frequently ask ourselves, why is not this philosophy equally practicable in all other industries? Why is it not truly practicable in our public schools, through which the virtue of self-protection, through compulsory, personal sanitation and simple hygiene would so speedily and efficiently enter every house in the land, and eventually become one of the important factors in our daily religious duties?

They are in advance of us in some countries, and quite recently the council of Marzburg, Bavaria, the seat of a University, has passed a resolution that the teeth of the poor pupils of the public schools of the city are to be examined and cared for free of cost. How about the children of this city and state? Are they worth looking after in this respect? We should not tire, neither should we rest until our efforts in this line would result in a full, com-

plete and practically successful termination. Why not give our army and navy the protection in this line of action, which they really so well deserve?

We have not a sanitary law on our statute books, nor a compulsory rule of action in regard to contagious or infectious diseases, if strictly enforced, but which is always followed by most satisfactory results, showering a great blessing upon the citizen or community. We see this fully illustrated day after day, year in and year out. What a wonder that it is so restricted in its nature and the field of its application so extremely limited?

RESUMÉ.

The result of the adoption of these strict rules of sanitation and compulsory hygiene is most gratifying—so much so indeed, that outside of the personal evidence of practical observation, it would seem to be a real exaggeration of facts, if not the workings of an imaginative brain, rather than the conservative statement of the truth of a practical experience and close observation.

Our employes are not only happier in their work, but we have also practically eliminated the phospho element, which was so much dreaded by both operatives and also the employers.

But there is another important result in this work and one upon which we place a high value, and which we really think the base of all other improvements. We have, in a most noticeable degree, infused into most of the operatives, a practical spirit of self-interest. We notice this more each visit we make to factories. While we have never encountered the opposition from employes to anything like the degree anticipated, from the introduction into the factories, of these compulsory rules of action, we are at the same time both surprised and delighted at the facility and kind spirit with which the operatives have taken hold of the course laid out for them, and the solicitude with which they look forward to our visits.

Taking into consideration the class, generally speaking, of people we handle, the cumulative intoward circumstances under which they live and have been accustomed to live, many never having experienced anything else, and with the experience we have had in this work, we unhesitatingly assert that we cannot see how it is possible to fail of success in any field in which it might be adopted. In all industrial institutions, in public and

private schools, properly systemitized and carried forward, the showing for good would be practically immediate. Our plea in this is based upon a simpler and more practical life. With this forced upon us, as a people, we have some idea of the grand results.

Can we not open this great field of action and assist one or the other in relieving and elevating humanity to a better and higher life?

An Unerupted Cuspid.*

BY C. T. KING, D.D.S., NEW LONDON, O.

SOMETIME in October, 1897, there came to my office Mrs. B., age about 40, and asked if I could tell what ailed her jaw. Her face was very much swollen in the left superior, maxillary region, reaching to and including the left eye.

To my questions with regard to the history of the case she replied as follows, viz: "About six years ago I had some teeth extracted and a partial set made on a rubber plate. I wore that plate and used it with comfort until about four months ago when I began to have pain in that side of the face, followed soon after with swelling and soreness. I tried home remedies and stopped wearing the plate, but without avail and it was only when the neighbors suggested cancer to me that I sought medical advice. I went to two different doctors who treated me for neuralgia or something of that sort but did me no good. I finally went to Dr. W., who told me he did not know what was the matter and sent me to you. I am sure that none of the teeth were broken, for I took them home and examined them."

I placed her in the operating chair and upon examination I found that the teeth were missing from the left second molar to the lateral and the swelling hard and dense over the whole space, including a large part of the palatal region. There was a small fistulous opening in the region of the second bicuspid. I injected a 4% solution of cocain freely about the fistula and probed the opening. The probe touched something which I, in spite of her assertion that none of her teeth were broken, supposed

* Read before the Northern Ohio Dental Society, May, 1899.

to be the root of a tooth. I opened it up well with the lancet lengthwise and crosswise, separated the gum from the process each side and with a pair of spicula forceps proceeded to extract. I pressed the beaks well up to place, feeling my hold until I got them where they held. I then drew gradually downward and forward according to the resistance, using some force and slowly drew out what I supposed to be a fully developed cuspid. It lay lengthwise nearly horizontal with the posterior side down. I syringed the cavity with 3% pyrozone and dismissed the patient with instruction to return the next day if the pain continued. In three or four weeks she returned. The swelling was all gone; the cavity nicely healed and there had been no pain. I made her another partial set of teeth which she still wears. Upon mature reflection I am not so sure but this might have been a supernumerary tooth.

Proceedings of the Cincinnati Academy of Dentistry.

At the regular meeting on May 28th, 1899, Dr. Hulick, essayist for the evening, presented a paper entitled—

The Mason Detachable Crown and Bridge-Work.

BY W. O. HULICK, D.D.S., CINCINNATI, OHIO.

THE subject I wish to invite your attention to this evening is of great interest to the profession, and one that is receiving more attention than any other in crown- and bridge-work. Crown- and bridge-work, to my mind, has been, and ever will be, an ideal replacement in favorable cases. It has been, is and ever will be one of the most abused appliances.

A number of years ago it became, by reason of so many advantages, such a popular replacement that the new dentist and many others too, thought to take advantage of its popularity would place them far in advance of the older man. So he announces himself as a specialist in crown- and bridge-work. Later, when they are disappointed with results, they condemn the whole scheme as a fraud and say there is nothing in prosthesis, generally speaking. The next man hearing the cry of failures on every hand, wishing to banish the prejudiced feeling against this

method and try and revive the fast waning popularity for his own gain, announces himself as an expert crown- and bridge-worker, and explains that new methods and ideas have come to his notice that were unknown to the so-called specialists, and that these new methods would give perfect satisfaction.

Now the true expression is this, the terms are only figures of speech and have absolutely no weight. Aye, less than that, for as has been proven beyond a question of doubt, their use is only a delusion and used to deceive the unfortunates who wish to secure the best services for the least fee and has been proven that these so-called proficient men have been and are tearing down faster than the practical dentist can build up.

Many of the so called specialists and expert crown- and bridge-workers are good mechanics and gold-workers, and have with the new methods and ideas which have been advanced by the thoroughly practical dentists, constructed some beautiful work, only to adjust it on piers that were diseased, the gums denuded or the alveolar plates were absorbed to a greater or less degree, the tooth having lost its usefulness, aye, I will be compelled to say, many cases have been adjusted and are adjusted where the pathological condition would not warrant any artificial appliances without thorough treatment.

On the other hand, how often have we examined cases where the pathological and all other conditions were favorable and the appliance was too light to stand the force of mastication.

I once was called in a case where the conditions were identical with those just mentioned; a four-toothed bridge, weighing less than three penny weights, porcelain and gold combined. This bridge was in the mouth less than one year, broken down, decay attacking piers, doing infinitely more harm than good, causing the patient to condemn not alone this method of replacement, but dentistry in general. I inserted a strong bridge, which has given every comfort and satisfaction for more than five years, and is apparently in as good condition at this writing as at time of adjustment.

I was called in consultation about one month ago in quite an important case of a nine toothed replacement. I very promptly advised against constructing the piece. However, he had already prepared and fitted the abutments, four piers, and then to my surprise he asked me to work in the porcelains. Now, I wish to

ask this body of practical dentists, how much solder he wanted me to use on this nine-toothed bridge? One pennyweight would be plenty, he thought. Think of it.

Gentlemen, I did not start out to write an exposé. However, it seemed necessary in order to get at the foundation of my subject and to point out to you in a feeble way some reasons crown- and bridge-work is considered a failure by some and condemned by a great many who have had experience as mentioned. Some dentists try to explain it away by saying it is in the fault of breakage of the porcelains.

I visited a well-known dentist some time since, who has enjoyed a large practice for many years, partly due to the popularity of crown- and bridge-work, for he announced himself as a specialist and charged fabulous fees. He now condemns it to the profession and shows his patients a box full of broken down bridges, the efforts in every case of other dentists, so he says. We only have to read between the lines to get his policy.

I wish now to call your attention to some practical points and will try and point out to you some of the difficulties that some of the later and tested methods have overcome and proven advantageous beyond a doubt.

Aside from the abuses crown- and bridge-work have received, in the hands of incompetent and inexperienced and the adjustment in unfavorable cases, the only real bad feature is the breaking and checking of the porcelains. This happens to a greater or less degree with all crown- and bridge-workers and under all conditions, favorable and otherwise, while constructing, and after completion and adjustment. Crown- and bridge-work has been for many years very popular, but these difficulties, along with the other conditions mentioned, have confronted the practitioner and have greatly diminished its use. However, in spite of these facts many good bridges are constructed and inserted every day. A dentist may be ever so skillful and experienced, the piece may be faultlessly constructed, step by step, until the soldering process is reached, the investment heated up and cooled down, the soldering may be equally as skillful, but the great amount of heat necessary to unite the different parts is very likely to injure the facings, either from checking, discoloring, or from being etched with borax, or all three may happen. Nothing is more discouraging, I think, than to have this happen, and should it happen

the work is rendered useless and we must do the entire piece over again or put into position very unsatisfactory work. And again, our trouble does not stop here, or, in other words, this is not the only source of discomfort to the practitioner, for he may adjust a seemingly perfect piece, only to find in a short time a broken porcelain with no apparent cause, or, as has happened, a facing may be forced off while adjusting the piece. This difficulty is due either to the expansion and contraction of the backing or to the shrinkage of the investing material, drawing the backings together, bringing the approximal surfaces of the facings closer, thus forcing them off. The repair of this kind of fracture out of the mouth is simple enough, but never as satisfactory as if it had not happened. But when it happens in the mouth it is quite a different matter and very hard to repair.

By reason of these difficulties many dentists have made detachable porcelains; some very successful attempts were made, but not to that extent as to meet all requirements. Dr. Mason, the inventor of the Mason detachable tooth crown, was identified for a number of years with the New York Dental College and in 1878 commenced experimenting along this line, and after twelve years hard work gave to the profession that which no dentist can afford to ignore—for detachable porcelains are as important to crown- and bridge-work as crown- and bridge-work is to dentistry; in other words, the Mason detachable crown is the missing link in fine crown- and bridge-work.

I have many times made the statement that detachable porcelains would be the coming crown; they are here and are here to stay, and are meeting with every satisfaction all over the country by the best and most competent, where they have been used. They have been enthusiastically vouched for and recommended by the First District Society of New York City, also of the Academy of Stomatology of Philadelphia, the S. S. W. Dental Manufacturing Co., the Justi Dental Manufacturing Company, Dr. L. T. Sheffield, Dr. C. M. Richman, and many other crown- and bridge-workers and colleges throughout the United States.

The Mason detachable tooth crown consists of a porcelain tooth with a platinum inlay and dove-tail attached which slides into a gold backing, thereby making it detachable and supplying a long-felt want of the dentist.

The advantages to be gained by this method are many.

First of all, the porcelains do not come under the flame of the blow-pipe; second, we are not annoyed by the change in color etching by borax, or checking of porcelain which takes place in soldering in the old way. Third, the most important points of all, the amount of time saved to the busy dentist, which will equal about one-fourth to one-half the time spent in the old way; and in case of subsequent checking, which is reduced to a minimum, the new tooth can be attached in a few minutes, making the bridge as perfect as before without its removal from the mouth. The construction of the crown or bridge with this system, is to my mind the easiest method and by far the best of any system that has come to my notice. There are many other good qualities, almost too numerous to mention.

The platinum inlay is baked in the tooth almost its entire length and the strongest and best porcelain is used, making a facing stronger than the ordinary method. Tests have been made by suspending a weight attached to the inlay, and they have been found to stand a test ranging in pounds from twenty-two to thirty, before the facing would leave the inlay.

With this system we are also relieved of the distasteful tips of gold at cutting edge, made necessary to give sufficient strength to withstand the force of mastication. The Mason detachable tooth crown in no way interferes with the approved modern methods of crown- and bridge-work, but, on the other hand, it greatly simplifies, giving to us an advantage over all other systems known to dental science.

Crown- and bridge work is not only an ideal replacement, but when constructed with the Mason detachable porcelain it is strong, durable and artistic.

There is an element which enters into the conception and execution of every branch in the practice of dentistry, and more or less forms part of every operation that we perform, be it surgical, operative or prosthetic. This element lightens, so to speak, our drudgery, gives individuality to our work and brings satisfaction to ourselves, that fully repays the time spent in fulfilling all of its requirements. It was born with our race, and has inseparably accompanied every movement that has brought happiness and comfort to man. It has contributed its share towards raising the physician from a mere bleeding, physicing, leeching animal, to the position he occupies at the present time, and has

shown to the mechanic and inventor that if he would be great he must be more than an artisan, he must be an artist. This element, the element of art, wherever it enters the field of human life, has for its function to finish and render attractive the hard labor that precedes it.

DISCUSSION.

DR. McLEAN: The Mason detachable tooth crown, as it is applicable to bridge-work, is certainly an advance in the substitution of artificial teeth for the natural ones. The subject of bridge-work has been quite interesting to me, and owing to the fact that I have had to remove a number of bridges, because of broken facings and loosened abutments, the latter caused by use, I have been somewhat modest about inserting very extensive bridges. I have here a few specimens of the old systems of bridge-work, which I have removed from mouths. From them you can see the result attained, and the utility of such work in patient's mouths.

This system of inserting the porcelain facings, after the completion of the bridge, is quite meritorious, and a grand advance in the substitution of artificial teeth for the natural ones. I think when we substitute four teeth, we have gone about as far as we can in inserting bridges. I think that two teeth, be they single or multi-rooted, cannot carry or bear more than four teeth. I believe that the teeth loosen up; there is a condition which results that produces inflammation, and which will eventually loosen up the teeth so that the abutments become useless for maintaining the bridge.

There is no question but that the method of insertion of the porcelain facings in this particular kind of bridge-work is meritorious, and if instances occur—and they do occur with the best of operators—the facility with which these bridges can be repaired is very pleasing. The expense attached to this class of work is a very small item, because we do not care what we charge our patients for this work, because the highest fee obtained by the highest priced dentist is not any too much. Dr. Hulick has had much experience in this line, and I believe him to be competent to manufacture a bridge that will be as lasting perhaps as any we know of at the present day.

There is one objection I may refer to, and that is the manu-

fracture of the nine-toothed bridge the doctor refers to. It is incongruous it seems to me, to make a nine-tooth bridge; there is no question but that it is necessary to have one abutment for every two teeth you supply, and when you go beyond that there is such a strain on the abutment that it is not lasting or permanent. It requires some skill and knowledge on the part of the operator to know when and when not to utilize a tooth as an abutment, and I believe many of our dentists are a little lacking in sufficient information on this particular subject, and what I have seen of other men's work proves that to me conclusively; for instance, a lateral incisor utilized to swing in a couple of centrals, is ridiculous it seems to me; the root of this tooth is too small and not strong enough, even though you had a stay against the other lateral. I will pass around a few cases I have in my pocket, for the purpose of allowing you to see how some men do dental work. They seem to expect one or two teeth to carry a large bridge. These specimens were taken out of patients mouths or were presented to me for repair, etc. In inserting these bridges the physical condition, age, etc., of the patient should be considered—not necessarily the sex; however, it is only the mechanical or artistic ability of the dentist that gives the patient the greatest amount of service from this class of work. The care the patient gives to this artificial work also is an important item. The dentist is bound to instruct the patient as to taking proper care of such work.

I would say in conclusion, that we should never expect to insert more than four teeth with two abutments, and those should always be at the extreme ends of the bridge. Open-faced crowns for abutments are not at all advisable; they lack rigidity, etc. Some dentists claim they can crown laterals or cuspids without mutilating the natural teeth and have such a close fit that the bands cannot be removed. My experience has never proven this to be true, however. Straightening the side of a lateral and using it for an abutment is an error; it ruins the tooth. There was a time in the past, a few years since, when everybody inserted bridges; now the better practitioners do not insert such large bridges as they used to.

This improvement in bridge-work I think will facilitate this work so that we can insert a little larger bridge perhaps, because of the ease with which repairs may be made, etc., in case of accident.

DR. GENSLEY: I consider crown- and bridge-work, in its proper place, the best thing in dental practice; but in the wrong place, about the worst thing. If we can always in advance exercise fine judgment and discriminate where to use crown- and bridge-work, and where not to use it, we make no mistake and it is a good thing perhaps. We all have cases once in awhile where the porcelain will check after inserting, and we know the trouble of replacing the facings, so that this Mason crown is certainly a step in advance and will lessen this work. There have been several schemes devised for putting on removable porcelains. The ease with which these facings are removed, however, may be a disadvantage; possibly the porcelain may come off too easy it seems to me. I think they are put on with gutta-percha. The ingestion of hot foods or drinks may soften the gutta-percha and loosen the facing. If that should happen frequently, possibly the patient might condemn the work.

DR. KUMLER: There are two things I would like to speak of. In the first place, we, as dentists, should practice legitimately as regards this bridge-work, *i. e.*, have much regard for the selection of piers that are strong and will bear the burden we wish them to; that is, we do not expect them to stand too much work, and Dr. McLean sounds the keynote when he says one tooth should not bear more than two artificial teeth or dummies; possibly we may go further than that and say that two piers should be required where there are two dummies or two artificials to be supplied. I do not think that where the dummy or the artificial tooth is to be supplied and much work is to be required of it, that one pier will prove successful. There is much less leverage and if we insert the bridge at all we must insert it so that it will stay; that is, have the piers strong to begin with, and then make the bridge strong. I agree with Dr. McLean that open-faced crowns are not a success. I have never seen any that were of any account; they may look all right, but even from that standpoint I think it as well to have the whole gold crown show as the tip and band.

In making bridges I do not believe in being stingy with your material; it is a great mistake in trying to economize on material.

The product of Dr. Mason is a great improvement over our old-fashioned facings. The facings made with pins will not compare at all with these as to strength, regardless of being heated

in the manufacture of the bridge. I think it the business of the honest dentist to give his patients the very best product that can be given them.

DR. SCHRAMM: There is nothing further to say than for me simply to endorse what has been said in favor of the Mason detachable crown. I used it when it first came on the market. In some cases it is not applicable; on the other hand it fills a long-felt want. I am not in favor of setting extensive bridges; I have used the Mason crowns in one bridge where I supplied four porcelains—one cuspid, two bicuspid and the first molar. The bridge was anchored to the second molar by a gold crown and to the cuspid by a Richmond, with Mason facing. Some time ago I had the pleasure of resetting the molar, which was broken by the young lady chewing some hard candy; it was a matter of five minutes work only, however. There was no antagonizing tooth to strike the molar. This shows you the facility with which the bridges can be repaired and with little cost to the patient, and with a greater amount of success.

The selection of facings is a little more tedious on account of not having so many facings of that kind at the depots, but the attaching of the facings themselves is a matter of only a few moments, and as I mentioned in the beginning, there is nothing to say but to endorse the efforts that have been made in the direction of our replacing broken porcelains when once they have been broken.

There are, of course, some cases where the Mason is not advantageous at all, and the main thing for the dentist to do is to use his brains, if he has any. That is the sum total of the whole matter.

Preparing Cavities in Bicuspid and Molars.*

BY J. K. DOUGLAS, D.D.S., SANDUSKY, O.

WHEN this subject was assigned to me, for it is not one of my own choice, I began to think what I could write about the preparing of cavities in the proximal surfaces of bicuspid and molars, that would be of interest or instructive to the profession.

* Read at the Northern Ohio Dental Society, May, 1899.

I realized then, for the first time, that while I was making these fillings nearly every day, I could not write very intelligently on the subject, for the reason that I did not follow any regular system, I broke down thin walls, removed decay, made undercuts, etc., and, perhaps, made some very fair fillings. But I find to do good work in these cavities, one must adopt some method or system to follow and prepare all cavities as nearly as possible to the method. I do not claim it advisable every time to prepare the cavity just as I show in the models, for sometimes the dentine is so sensitive, or the walls so badly broken down that it is almost impossible to get them into the shape desired.

After reading every thing that I had on the subject, and studying each filling as it was made, I found the method used by Dr. C. N. Johnson, of Chicago, and given in *Dental Cosmos*, Oct. and Nov., 1898, to be the most satisfactory method to follow.

The proximal cavities in bicusps and molars are treated so nearly alike that I will give most attention to the former.

First, take the simple proximal cavity. We very rarely have occasion to fill this kind of a cavity, about the only time being when the adjoining tooth is missing, or where there is such a space between the teeth that one may have good access without cutting into the occlusal surface. These cavities are very simple, making the border as strong as possible, beveling the margins, and fill as any simple cavity.

Second, we have the proximo occlusal cavities. What is expected of filling in these cavities? First, the arrest of decay; second, to prevent further decay; third, to restore the tooth to its normal shape; fourth, to so anchor the filling that it will stand the stress brought to bear on it by mastication. The first step in preparing a cavity of this kind, is to remove all the delicate walls with a sharp chisel, until we have gained good access to the cavity, remove all the soft decayed matter with spoon excavators, then begin to shape the walls as desired. In forming walls try and have them as nearly as possible at right angles. The lingual and buccal walls should be parallel to one another, extending from the occlusal surface to the gingival wall, which should be at right angles to these, thus forming a square or rectangle, as the case may be, and the walls of the three sides should be flat, tapering towards the axial wall, to make the cavity larger next to the axial wall than at the borders. The broader we can

make the area of resistance to the stress of mastication the more securely will we retain the filling. The open portion of these cavities makes the adoption of gold to these angles very convenient. By building our fillings against flat walls, joined by angles, we have a stronger filling than circular wall joined by curves, for the reason that it is harder to roll a cube than a sphere.

At the occlusal surface, we nearly always have a tissue running mesio-distally with the tooth. Here the enamel is thin and caries generally follows the fissure. In a great many cases it is advisable to form a step by cutting out the fissure the entire length. This forms a lock to hold the filling in place. This step is formed by cutting out the fissure. After removing enamel the full length, use an inverted cone making the pulpal wall flat and sides to taper, being a trifle smaller at the occlusal surface. In this way a lock is formed to hold the filling against the stress of mastication and the liabilities of its being displaced. After the cavity has been shaped as nearly as possible to the described method, all enamel margins should be gone over and beveled, so that the material used for filling will burnish over and protect the borders. One should always be particular to get the desired contour on these fillings, so that the gum tissue in the interproximal space may retain its natural form and be kept in a healthy condition. When the teeth are in their normal position in the jaws, they are supported on the proximal surfaces by contact with the adjoining tooth and the interproximal space between this point and alveolar ridge is filled with gum tissue, which has an arched form, and so long as the space is kept in proper shape and the gum takes its normal position the prophylactic condition is not impaired. But when the cavity has been badly broken down at the point of contact, the continual pressure of debris which collects there presses the gum away from the gingival border. In such cases the teeth should be separated by packing or other means and filling made to so contour as to make the point of contact near the occlusal surface, giving ample room for the gum to again fill the interproximal space.

Artistic, or Esthetic Dental Prosthesis.*

BY J. G. TEMPLETON, M.D., D.D.S., PITTSBURGH, PA.

EVERY pursuit, trade, or profession in life, is entitled to be regarded honorable, just in proportion as it administers to the legitimate wants of man, or contributes to his real happiness and well-being. Where, in the whole round of the professions, do we find one that embraces within its sphere more than dentistry?

It not only includes or requires a knowledge of the natural sciences, but also a taste for the artistic, the true and the beautiful. No block of marble in the hands of the sculptor was ever more subject to his control than are the varied expressions of the mouth and its surroundings subject to the controlling power of the dental art. How easy a matter it is for the dentist, who lacks appreciation of the artistic, to destroy all harmony of the features by inserting a faulty denture, which makes the very mouth a libel upon its possessor.

The educated dentist, in the fulfillment of his high calling, is most successful when following in the track of scientific truth. The construction, adaptation, expression, and utility of artificial dentures, depend very much more upon science than art or mechanics. Scientific truth only will enable us to discharge our whole duty. These lie in our pathway, and he who applies himself with a desire to become acquainted with these truths, will, in their employment, find not only the means of overcoming all ordinary difficulties, but will be enabled to secure to those requiring his aid the full benefits of them. The impression in as well as out of the profession, has been that the insertion of artificial teeth was simply a mechanical effort. This error, having gained strength by the course pursued by many of our older practitioners who have ignored its practice, as well as those practicing it, has done much to degrade the profession, by inviting to its ranks uneducated pretenders, whose mechanical efforts (bad as they often are), excel those of our so called first dentists, simply because the latter have only educated themselves in one branch of our noble profession, and are just as much quacks, when they attempt the insertion of artificial teeth, as the others

* Read before the Northern Ohio Dental Society, May, 1899.

when they attempt to fill them. Many young men just entering the profession, emulate the example of those who make a specialty of operating, and fall into the common error of supposing that it requires more skill to fill teeth than to insert artificial ones. It is high time the profession and the public were disabused of so great a mistake; and also for the fad for having all gold crowns in the front part of the mouth, producing the horrid disfigurement now so frequently exhibited.

While we are frank to acknowledge that operative dentistry requires skill, experience, sound judgment and delicate manipulation to secure success, yet we do know that a very much higher order of attainment is required for the selection of teeth and the construction of artificial dentures, to imitate nature and restore expression, etc. And that there are many more failures in the prosthetic than in the operative branch of our profession. In filling teeth the operator has every opportunity of determining whether the tooth has sufficient substance to justify an operation upon it. This often requires more discriminating judgment than the operation itself; and when this is rightly determined, the manipulation thereafter is comparatively easy and certain. Enough of the substance of the tooth remains to give the operator a tolerable idea of its original form, hence a contour filling is a thing of comparative ease. But when a patient applies for an artificial denture, a mere wreck of the original is presented—not a tooth is left to tell the tale, whether beauty in all its symmetry and grace once had its abiding place within, or irregularity and distortion rioted in unseemly disorder.

The nose and chin seem conscious of the horrid chasm between them, from whence inarticulate and unearthly sounds do come, in mortifying contrast with the sweet, melodious and distinct articulation so peculiar to its original self, and are endeavoring to close the “gap” by coming together like old friends under mutual affliction. To restore this wreck of departed beauty to its original freshness, to obliterate all evidence of age, disease, or neglect, is the true and noble mission of the dentist. This can only be accomplished by a thorough knowledge of the science of life and the modifying influence of temperaments, habits and hereditary traits, transmissions and peculiarities, in the absence of all other evidence, by reference to portraits or family resemblances or otherwise.

The dentist has to fall back upon his knowledge of anatomy and physiology to enable him to restore the picture. He must have a creative mind; he must draw from the storehouse of true knowledge; he must know what expression, what conformation, what effect is required in each case that is presented, each differing so widely in health that we recognize the individuals on slight acquaintance, by their individual peculiarities. Beauty, ever retiring and modest, having receded from the surface, where its charms were once reflected, is now with broken smiles calling to her aid the magic hand of science and art, to lead it gently back, blooming, with its former youthful expression. The study of the mental effects on facial expression and of physiognomy, as well as anatomy and physiology, is required. Every source of knowledge which will aid us in the development of a higher capacity, or augmented perception and increased usefulness, should be employed to render us competent to discharge our high duties. If, by mistake or ignorance, we select teeth that are in form, color, expression, or general arrangement, defective, our productions, however satisfactory to our patients, are nevertheless failures, and exhibit to the world but too plainly a total lack of fitness for the occupation in which we are engaged, and cannot fail to bring a blush upon the cheeks of the true artist, whose perception of harmony detects the frightful incongruities.

Judging from the great number of dental abortions which we constantly see, not only in the drawing-room, but also in the public car, we are forced to believe that we have in our profession a great many more dental *artisans* than artists. It seems as if most dentists have a passion for small delicate teeth, and many want the whitest, and use them indiscriminately, regardless whether the patient be a blonde or a brunette. It is the custom with many to observe a stiff mathematical precision in the arrangement of the teeth, thus giving them a noticeable artificial and unnatural appearance. Teeth set upon the plate in this manner are better adapted for the show-case than they are for the mouth; although to the dental *artisan* they *may* look beautiful and seem without a fault. Shades of complexion and expression of features vary and differ as do the trees of the forest: but yet each individual has a principle of harmony pervading and governing his entire being; thus we never find red hair associated with a dark complexion, neither do we find pearly-white teeth. The color of

the hair, eyes and complexion—the expression of features, and in fact the whole build and formation of body—are in perfect harmony and keeping with their shade, form and size of the teeth. Long, narrow teeth are not usually found with round, broad faces. The predominant forces in the system, which give rise to these physical characteristics, are denominated *temperaments*. As these temperaments change with age, so also does the expression of the teeth. In old persons the shade and appearance of the teeth are in perfect keeping with the changes that time has wrought in the features of the face.

When the natural teeth are closely examined, we do not find them set in the arch with “mechanical exactness;” but with a “graceful irregularity.” Strict *adherence* to nature is the foundation of *artistic* dentistry. No set of rules can be given for the selection, arrangement and adaptation of artificial teeth that will apply to every case. Close observation, a careful study of nature, particularly of the temperaments, and a well applied experience, can only make one proficient in this interesting department of our profession.

In regard to the merits of the different materials of which plates are made, we will dismiss gold and platinum by saying that their superiority is so generally conceded that the writer feels that he cannot say more than that in the continuous gum work we find our ideal almost perfectly attained by its use. The last material we would recommend for the purposes of restoration is vulcanized rubber. The ease with which it can be manipulated, constitutes in our opinion, the only reason why it should be used, which, in connection with the low price at which it can be obtained, and at which it is served out to the public at large by the many would-be and so called dentists of the present day—themselves the creatures of its introduction—constitutes the main reason for its universal adoption as a base for artificial teeth.

One great objection to inserting such a mass of rubber as would often be necessary in restoring contour, is the deleterious effect it has on the mucous membrane in the mouths of a great many persons, caused by its non conducting properties. This brings us to the true explanation of the mischief wrought by vulcanite (not because it has failed to sustain the promise of usefulness it first gave), but because dentists themselves have made an incidental quality its prominent advantage, and their real

motive for using it, namely its cheapness. They have used it thus in that underbidding of rival practitioners, which is the burning disgrace of dental practice. They have advertised their cheap wares to the world till the community looks upon vulcanite as a material which costs nothing, and thinks that the work spent upon it has not much more value; whereas, there was once a prejudice in favor of gold, now they have so thoroughly demoralized the people that they will not have gold when the necessity of the case requires it.

Were it merely a question of cheapness it would not be so serious, for it is a maxim of political economy, that he is a public benefactor who reduces the cost of articles of necessity; but it is no benefaction when the value is reduced in like proportion, and it becomes an imposture when the value is still more reduced. Cheap dentistry is like dollar stores and gift enterprises—you may possibly get the value of your money, you most probably will not. Now and then a dollar may buy ten dollars worth, but in the long run the inevitable laws of barter will prevail and the dollar will only buy the dollar's worth.

There is no more certain law than that cheap work leads to bad work. If proof of this were needed in dentistry, look at the shapeless, inartistic, badly fitting lumps of rubber stuck over with staring bits of porcelain, which issue from a thousand dental offices—*false teeth*—most appropriately so-named; false to every idea of truth, beauty and fitness; made by men false to their own self-respect and dignity, in permitting themselves and patrons to be thus disfigured and made ridiculous.

A dentist who is mean enough to get patronage by underbidding, will be dishonest enough to make it correspond to the price; and this has come to be a common, and, alas! an accepted excuse for not doing what the case requires. "I cannot afford it at the price I get." Hence cheap dentistry is dishonest dentistry, when the fee is such as to prohibit the fullest exercise of the skill possessed by the dentist. A dentist who gives his time at prices which demand unceasing toil to earn his daily bread, leaves himself no time for mental culture; his work becomes a drudgery, in no respect more elevating than that of a common day laborer. Hence, cheap dentistry is degrading dentistry. We sum up our charge against vulcanite—or, more correctly, its abuse—in that its cheapness and a certain facility of construction has tended to

foster cheap dentistry, and so make the dental art slovenly, dishonest and degrading; it has been so used as to lessen the demand for art and skill, and to encourage a community to prefer economy to artistic workmanship.

Let us all hope for the time when the people will require that artistic service and skill which our profession is capable to render.

Cleveland Dental Society Proceedings.

THE paper of the evening was read by Dr. S. D. Stewart (see page 521 this number). Following is the

DISCUSSION.

DR. WILSON: We ought to congratulate ourselves that we have had the privilege of listening to such a paper as this, because, I think Dr. Stewart is the only man in the United States who could give us such a paper as we have had this evening. I feel that Dr. Stewart is opening the way to new lines of progress, that is tending to uplift our profession, and anything that tends to do this is praiseworthy and should receive support, for there are so many things that have had a tendency to degrade our profession in the eyes of the world, and when we have anything, or any man who can help to uplift us we ought to feel very grateful to have him with us and have him tell us of his work.

Another thing has been particularly pleasing to me, and that is the prophylactic sense of the topic. The great care that rests upon us from this point of view, is the education of the people against these evils which might be prevented. For instance, if we take the organs we are so much interested in and through which as much harm may come to a person as through other pernicious injuries,—we should instruct the people that they may avoid the results of lack of care or cleanliness. I believe that it is true that poisoning to the system often results from injuries to the teeth, or their lack of care. Of course with all the bacteria with which we know we have to deal there is danger to the system, and we are so accustomed to it that we do not pay much attention to it, ordinarily, but when we have a case of phosphorous poisoning we are impressed with that because we do not see it so often. This should be a warning to us not to neglect the question of prophylaxis. I am one who believes most thoroughly

in prophylaxis or the prevention of disease as the great work that, as dentists, lies before us to do. It is a work of love, of course, for we cannot expect much money to result from it, but I feel that we should take it up as a work of love and do it. I feel that we should not stop to look to see how much money we get out of it. We shall get our reward later if we do not get it in dollars. The Good Book tells us to "cast our bread upon the waters and we shall find it after many days." I think if we follow this injunction out, we will find that it has not been only the selfish end of this that we have reaped. I have no patience with the man who goes into this work of dentistry with only a selfish aim. Such a man may flourish for a time, but you will eventually find him leaving the town he located in. So I think we feel like extending our hearty thanks to the doctor to-night for the words he has spoken to us, and also for his unselfish work.

DR. BUTLER: I have received much pleasure in listening to this paper, and I rather want to congratulate ourselves because we have had the honor of this presentation from an Ohio man, for I believe it is the first thing done by any man in this line.

One point in particular, which the doctor mentioned in his paper, was in regard to the improved machinery used in these factories for the production of their goods, but he did not fail to mention the fact that this machinery was produced by the finest piece of mechanism known to man, and that is, man, himself, requiring the finest care that is ever bestowed upon the finest watch or any other fine piece of mechanism ever made. Take the case of an engineer. How he loves his machine! And why? Simply because he knows he can depend on that fine machinery to do his bidding, and he comes almost to love his engine. Now these factories are dependent upon this machinery to produce fine products, and how shall they do it unless they have the finest of machinery to produce them? This term of hygiene is one which we use very flippantly many times without realizing its great importance, and as Dr. Wilson has said, whatever we do in that direction we would hardly expect fees from. Are there not many things for which we do not directly exact a fee, nevertheless a fee comes in consequence of or through our services in that direction. In the appreciation upon the part of our patients that we are their benefactors, lies the secret of our success. If they have no confidence in us or in the skill which we exhibit for their benefit, we need not expect to retain them as our patients. And

we should remember another fact also, and that is that progress is being made directly along these lines, and more and more is being demanded of us all the time.

Now Dr. Stewart has mentioned the fact that surgery had formerly done a great deal in alleviating the suffering from phosphorous poisoning, and that that had become a minimum part now in the treatment of these cases, because the hygienic was the important part looked to now. So we see that the old treatment has gone out, and there has come about almost entirely through the efforts and suggestions of one man the inception or initiation of a plan that is doing a great work. Just see how, through the short outlines he has given us of his work, he has made us see how far-reaching it is,—see all these large factories under his care, and see how many are not only cared for in this way, but how much better conditions prevail among them in other ways. For instance, unless in the case of these employes, the dental apparatus is in good condition, it is not able to perform the first work of digestion, that of properly masticating the food, and so assimilation and nutrition are not perfect. But with good teeth the work of nourishing the body is performed and the general health bettered.

Now if this work were carried on, not only in match factories, but in all trades, how much might be accomplished.

I had rather hoped that the doctor would give some differentiation with regard to the conditions which arise in these cases. Sometimes there will be difficulty in telling the difference between phosphorus poisoning and some other specific poisoning. For instance a company of lawyers want to make out a case against a firm for a person employed by that firm, who has suffered from some poison received while not in their employ, instead of as a result of work done for the firm. Now a strong case might be made against that firm if there was no way of differentiating between phosphorus poisoning and poisoning received at an earlier date. If an employee could make out a case of this kind against a firm as a result of poison received from some other source, and the diagnosis not to be such as to settle the question as to when poison was received, it might prove a very serious matter for the firm to prove that the injury had not come while in their employ. So I think we ought to be able to settle the question as to diagnosis in these cases exactly, and if

so, it is a question that certainly should excite our interest, and cause us to be more studious if we wish to be classed as professional men, and do our part in the elimination of these evils.

DR. JACKMAN: I would like to ask the doctor a question however, and that is as to diet,—whether he would advise the use of articles particularly free from phosphorus, or just an ordinary nourishing diet.

DR. RHODES: One thing impressed me particularly, and that was the humanitarian feeling towards the employes which seemed to prevail throughout this paper, not only as to the writer's consideration for their organisms but for their normal and spiritual welfare, and it is pleasant to note that he is interested in these classes in this way, and it is also interesting to note that he is so much interested in prophylaxis.

DR. LODGE: I think that the initiation of a system of hygiene insisted upon by the employer for the employes might be made, as has been said, of very much wider use. If it is a good thing in match factories, why not in other factories? If a person, by having a dentist examine the teeth and care for them, is able to do better work, why is he not much better fitted for his work with the same care in any other line? Why will this effort stimulate other manufacturers to try such methods? It is my impression that it is compulsory in France to have such examinations of the teeth. In Germany I am sure that this is the case.

DR. ROSENSTEEL: Of late I have been doing a great deal of work for the State Hospital, and I have often thought that some such work, as care of the patient's teeth, should be taken up. I have also found there some cases of necrosis in which the condition of the patients' mouths was simply awful,—I do not know of anything else that will express it. I had some talk with the physician there about it. In some of the eastern hospitals, and in some of those in Europe, they are taking some care of the patients' teeth, and I believe that some such work should be pushed in other institutions as well as in the one of which the doctor has told us.

DR. HARVEY: I had supposed that the efforts made by the doctor related more to work in the direction of cure than prophylaxis. I would like to ask him, when such cases do appear, what he does with them?

DR. BARNES: I think we are all very greatly honored to—

night,—highly honored by having Dr. Stewart present to us the very first paper of the kind ever presented upon this topic.

There is one point I would like to mention, that the doctor did not bring out very strongly, and that is the character of the work done by incompetent operators in New York and other states,—he was so kind as to exempt Ohio from the list. Now that class of work would be careless throughout. There would be no prophylactic work. There would probably be danger of infection also, resulting from careless asepsis of the hands, instruments, etc. Dr. Miller reported that out of seventy-odd cases resulting from infection, about fifty had died and others had suffered horribly. Now this is an awful statement and it behooves us to be as careful in our dental work in guarding against infection, as we would be in dealing with a wound. It is surprising how careless some dentists are in matters of this sort, and we ought to utter words of alarm against it. It is surprising to go into the offices of some men and find instruments lying upon the table ready for use again, just as they were when used in the mouth of the last patient, instruments not even washed, and many times these instruments are in plain sight of the patient who came for treatment. Now I am not speaking of odontunder offices. I am speaking of the offices of men who have been honored in our profession, and I believe that we should emphasize these things. It is right in line with the paper Dr. Stewart has given us to-night. I think he could tell us something about the results of such infection right in the line of his work. I am very glad to have heard the paper, indeed.

DR. VAN DOORN: At first I was a little skeptical as to the pure philanthropy that pays so well in this day and age, that I rather doubted its genuineness. But on thinking over this question there was one thing that convinced me that it was pure philanthropy back of it, and I was brought to this opinion by the fact that other companies do not do this. As the essayist says; this brings about cordial relations between the employer and employes, and it is only under such conditions that the highest service can be obtained.

DR. RAMALEY: I am glad that prophylaxis is being dwelt upon this evening, and I think it would be a good idea if it could be introduced into our public schools. If we could have the care of the teeth in these children and preserve the deciduous teeth

longer and in better condition, it would prove a much easier task to preserve the permanent teeth.

DR. REED: I would like to ask the doctor to explain for my benefit,—Do the teeth immediately get worse when the necrosis gets started? Or is it some time before the ill effects appear?

DR. EBERSOLE: I am very much pleased with the paper that has been read in our hearing this evening, and very much interested particularly in that part which referred to prophylaxis in our schools and factories, and I wish to call the attention of our society to the fact that we have already, as a society, introduced into the public schools instructions for prophylaxis, and we have placed, as it were, the entering wedge for a great future work in that particular line. If we were able to get our children to take good care of their teeth, and educate them as to the importance of care in general, we would not need to introduce prophylaxis in our factories. We hope that the time will come when the work that the society is doing will be carried far enough to require that the teeth of the public school children shall be examined and cared for by competent men appointed for that purpose. We believe that a great many of the diseases contracted by our little ones come from neglect of the care of the teeth. If phosphorous necrosis can come from phosphorus taken in through the teeth, can we not bring forth almost any infectious disease through these minute openings in the dental foramen by the passage of the micro-organisms through them. If not in this way we all know that these micro-organisms bring about the destruction of the teeth producing toxins which cause a greatly lowered resistance of the oral tissue favoring the growth of bacteria, and through these organisms attacking the mouth various diseases are brought about. Those of us who understand bacteriology know what serious things may result from infection of this sort. If we have diseased teeth or minute openings in the mucous membranes we can bring about other diseases through these openings.

Speaking of prophylaxis, we wish to call your attention to the knowledge possessed by the medical profession, and yet they pay little attention to the dangers of the neglected teeth. We want to call your attention to the fact that very few recognize the truth that disease is often brought about through lack of care of the teeth, and while we are educating the public, should we not

be educating the medical profession,—that profession which is supposed to be the most prominent profession as to its stand upon questions of prophylaxis? Should we not turn their attention to this particular subject of dangers from neglect of the teeth? Should we not call the attention of the society to that profession which likes to hold itself as far above us, and educate them in this particular?

DR. PRICE: Our honor is being favored by the presence of Dr. Stewart, and by having this valuable contribution to the science which we all so dearly love is only exceeded by the blessing that has come to that people whom he has been working among,—that colossal work with which he has benefitted them. I do admire the spirit of this paper and the spirit which the doctor has shown, and oh; I do so much wish we might have it in all the institutions throughout this country of ours. I will be glad when the day comes, when those are not able to pay for such absolutely essential services shall have them gladly paid for by those who are rich, and may the day come when we, as dentists, shall initiate such benevolent movements as will come to the rescue of those who are not able themselves to pay for these much needed dental services, for who would appreciate these needs as we?

DR. JOHNSON: I would like to ask Dr. Stewart if the lesions in the soft tissues are similar to the syphilitic condition as found in cases of syphilis where the bone is necrosed?

DR. EBERSOLE: I would like to ask Dr. Stewart to tell us one thing more in his answer, and that is as to his method of treating these cases, provided he cares to give it at this time, for I have had the privilege of seeing a few of these cases which have passed through the doctor's hands, and I think it would be very instructive to us if he would tell us how he handles these cases.

DR. LODGE: I would like to ask the doctor if he can tell us how this phosphorous necrosis comes about,—does it come through the agency of non-filled pulpless teeth? Does the phosphorus gain access to the alveolar process through the pulp canals of the teeth?

DR. STEWART: I suppose you all realize that it is more difficult to answer questions, as a rule, than it is to ask them. However, the great majority of questions asked, I observe, are inter-

rogatives which pertain more to that subject which you hoped to be discussed and are so anxious to learn of, rather than to the subject matter of the paper. It was neither our desire or intention to enter directly into the etiology or pathology of Phospho-Necrosis.

There are many questions asked here to night, while they apparently involve, simply, the question at issue, readily would open up a great field for discussion, and a field we are not only not properly prepared to enter, but one which it would be quite unsatisfactory to enter unless approached through the proper avenues.

We only intended to bring up the subject of Compulsory Prophylaxis, and to show the industrial aspect of the case, as developed under our practical experience, and if possible to show the ultimate moral and financial results. These questions of diagnosis, cause and treatment opens up too much of a "good thing" at one time. We only wanted to show you, as best we could, what exciting cause it was that opened up this new field of action.

I first answer Dr. Ebersole's question, rather in a general than a specific way, for it is our hope to bring up this subject of Phospho-Necrosis at some future time when we may be able to do greater justice to the subject.

Our first move is of a systemic nature, making a general diagnosis of the case, followed by the practical elimination of all surplus deleterious matter in the system. Strict, proper and nutritious diet—a general flushing of both urinal and digestive tracts, with all practicable exercise, sunlight and fresh air possible. Next local—all possible attention to septic and hygienic conditions of mouth.

As to Dr. Barnes' question:—As to the character of work complained of, I refer to slovenly, untidy and incompetent work. It is largely the class of operators (?) who resort to hypodermic injections; some of whom do not seem to have the least idea as to what proper hygienic conditions of the oral cavity consist in. They dream at night of, and ply by day the "septic" hypodermic needle. Our experience is perhaps unique, but I must confess my astonishment, not to say alarm, at the serious untidiness, to be mild, of many operators in the profession. It extends even farther than that. The results of which at times are not only alarmingly serious, but absolutely criminal. It has caused us much solicitude in our efforts and no end of annoyance.

As to Dr. Bosworth's question:—So far as the immediate effects of phosphorus acting upon the teeth, will say that we can not recall a case where we have ever seen any serious effect upon the teeth from the action of the phosphorus or its resultants. After occurrence of phospho-necrosis, the teeth are affected only in proportion to extension of soft tissue lesions, and then largely confined to periosteal and peri-dental investments.

As to Dr. Johnson's question:—In regard to similarity of syphilitic and phospho poisoning when necrosis occurs.—Yes, in many cases.

As to Dr. Lodge's question:—In answering this "double" interrogative in a general way we say, no. Phospho poisoning is largely, if not wholly systemic, but which is developed locally by some exciting cause—pre-eminently,

1st. Filthy mouth (good teeth but never cleaned and with super abundant calcic deposit, coated by decomposed animal and vegetable matter.)

2nd. Devitalized or abscessed teeth or roots.

DR. BUTLER: Doctor, did I understand you to say, that you were entirely opposed to the injection of anything hypodermically?

DR. STEWART: Yes sir, any and everything in the way of hypodermic injections.

DR. BUTLER: I am very glad to hear you say this.

DR. STEWART: I want to say I am very much interested in this question of hypodermic injection. I have made special inquiries where I have gone, both of medical and dental professions, and this is the opinion held by the most eminent and experienced men of both professions.

Dr. Jackman's question:—As to the diet, has at least in part been answered in reply to Dr. Ebersole's questions. Diet recommended is simple and limited as to varieties, eliminating as far as is possible all foods which contain large amounts of fermentive principles—yeast plant. This refers both to liquid and solid foods. The amount of food, especially during convalescence is curtailed or rather limited. The danger then is in over-eating. We think we speak conservatively when we state that 90% of the "civilized" world eat from 20% to 50% more than they need, and it is one of the most prolific causes of disease or rather degeneration perhaps. Any amount of food that goes beyond the

necessary quantity to build up growth and waste of tissues is not only harmful, but is an absolute poison.

With regard to Dr. Akers' question :—As to quality of work and pay for same, will say the company does not pay for the work. The employes are being taught, and they receive the instruction in the most kindly spirit—the importance of paying a sufficiently fair amount of money to secure good work and it is wonderful with what alacrity they respond to this instruction. They will say of a given dentist's work, "of course he charged me a 'good deal' for the work, but he did it 'good.'" I say to them "go back to him—don't leave him, pay what he asks and have the right kind of work in your mouth." I keep track of prices for services and see to it that there is no extortion allowed.

As stated in paper the most annoying part is this. When a poor boy or girl goes to an operator and has poor and unacceptable work done, the operator does not and has not taken into consideration the possibility of the patient being thrown out of work again and loose several times the value of the operation in loss of time.

DR. BALL: Why would it throw them out of work?

DR. STEWART: Because a poor filling or an unfilled or improperly filled root would still be a defective, a diseased organ, and in time liable to become an exciting cause of serious trouble.

DR. SIDDALL: Could not the employe come to the factory with an open wound and nothing be known about it?

DR. STEWART: Oh yes, but they don't do it often. They understand that it is not for their best interests to do so, and should they do so we soon discover it; then follows punishment in way of loss of time.

Now I will answer Dr. Wilson as to his remarks about the economy of returns received from prophylaxis. It is practically reduced to a question of economy; although when first undertaken it was with a spirit of sympathy and humanitarianism. No individual, corporation, or nation can apply the rules or laws governing prophylactic principles, in an intelligent way and not receive immediately, good and satisfactory economic returns. This is the experience we have had in the company with which we are associated. In a word it involves the success and progress of both employer and employe. Therefore, it would appear that intelligent, moral, selfishness is the very foundation of all true and lasting progress, and he who does not entertain this recipro-

cal moral principle, will not only be unhappy, but unsuccessful in the highest sense, of life's great work. Therefore, Dr. Wilson's suggestion of the "Casting of bread upon the waters" is humanitarian and commendable for reward will surely come.

I was very much pleased with Dr. Butler's remarks. He has manifested an intelligent comprehension of the conditions surrounding this work, and if we all do our duty to our fellow men, we would be amply repaid in both better service and other ways as well. There is an immense field for active progressive, remunerative work. Let us take up the work we know we should be engaged in, and not wait until necessity compels us.

Did you ever stop to think that really the best things of life are really forced upon us? About 75% of us really have our best traits or virtues "kicked into our natures." Well that is really and practically true.

As to Dr. Ambler's questions:—1st. There is no question about its being largely, if not wholly, through systemic infection, which is usually excited internally by abnormal oral conditions.

2d. They can have phosphorus poisoning, but there never was a case of phospho necrosis without first having a lesion of tissues.

Before closing my remarks, with your permission, I would like to give you a tabular statement of number and kind of operations I found necessary to be completed in one factory we visited, while abroad. We visited other than match factories, one in Glasgow, in which there were, as we understood eleven hundred employes male and female. Another in Liverpool in which were seven hundred employed and in both factories there was the greatest consideration for us. What interested and pleased us most, was the desire manifested, in the questions put to us, by the manager of factory to do all they could to better the environment and general condition of their employes and which we know could be done in many ways. However, the factory of which I give you the statement is the particular one to which I refer and is as follows:

No. employes	.	.	.	630
No. cavities to fill	:	.	.	2610
" roots " "	.	.	.	241
" " " extract	.	.	.	3036
" mouths to clean	.	.	.	290
Total operations,	.	.	.	6177

This table will no doubt give you a more practical idea of what is to be done in this new field of endeavor and the necessity of quick action if we are inclined to cover the whole industrial field.

Mr. President, I cannot close without thanking you all for for the consideration shown by this society, in extending to us the hearty invitation to present this subject before the society this evening. It is certainly most encouraging to us, this, as yet, our single handed effort.

National Dental Association.

HELD AT NIAGARA FALLS, AUG. 14, 1899.

(Reported for OHIO DENTAL JOURNAL by Mrs. J. M. Walker.)

(Continued from page 498.)

Porcelain Enamel Inlays.

BY N. S. JENKINS, D.D.S., DRESDEN, GERMANY.

THE process and material of the Jenkins porcelain enamel is the result of seven years study and experiment, scientific experiment and practical application going hand in hand. The successful use of this finally completed method, for over two years, justifies the claim that the problem of making with mathematical accuracy and scientific certainty, absolutely perfect fillings in diseased teeth, has been solved. A perfect filling, as thus understood, is one that fills the cavity so exactly as to exclude moisture; of a substance which will not disintegrate nor change its original form, either through chemical action or mechanical force; with a surface so smooth that it can be easily kept clean; a poor conductor of caloric; retaining the color and shape of the tooth; applicable to the most desperate cases and susceptible of being used without too great strain upon timid children and delicate patients, and its working must not make too great drafts upon the strength and nerves of the operator. It must be possible for any good dentist to use it with the certainty of obtaining infallible results. All these qualities are found in the porcelain enamel. A substance which can be melted in a gold matrix is

necessary, in order to permit its use by any competent dentist, in cavities in any part of the mouth, as an ordinary, well regulated proceeding in daily practice. Only the most exceptionally gifted and patient man can obtain such results with platinum, because of its intractibility. To keep the gold foil impression exact during fusing a paste of powdered asbestos and water is found best adapted to hold it in place, evaporating the moisture gently in drying out. The heat of gas is sufficient for fusing this body. It fuses at a temperature of 800° to 900° C., the melting point of gold being about 1075° C. The fit of the inlay is so exact that only a slight film of cement is required, but it is important to groove the inlay with a small diamond disk, and to form small undercuts in the cavity before setting the inlay. It is well to saturate the cavity with carbolic acid before setting the inlay, to render the pulp less sensitive to the irritating action of the phosphoric acid. A cement with very fine powder is to be preferred. The powder composing the inlay should be mixed with absolute alcohol, which evaporates with less disturbance of the particles than water, and also because it carries no deleterious substances in solution. The porcelain enamel adheres fairly well to platinum and when roots are to be banded for crowns the visible portion of the band can be covered with the enamel to great advantage.

DISCUSSION.

In the discussion of Dr. Jenkins' paper Dr. JOHN I. HART said that the interest manifested in this high class of work is a refutation of the idea that dental science is drifting towards commercialism; that it is lacking in artistic refinement. As a matter of personal choice Dr. Hart prefers a high fusing body, in a platinum matrix, which, if properly annealed, does not offer the difficulties portrayed in the paper. The advantage of the platinum matrix is that it can be tried in the cavity and more body added if necessary. For making a platinum matrix, in deep cavities, Dr. Hart's method is to take an impression of the tooth and cavity in modeling compound and obtain a duplicate of the tooth and cavity in oxyphosphate of zinc, which will stand the burnishing of the platinum into the cavity and over the margins. By filling this matrix two-thirds full and when cool carrying it to the cavity in the tooth, it can be pressed home, thus securing a perfect adaptation.

DR. DARBY said that he had had ample opportunity of observing Dr. Jenkins' artistic methods, which, in accuracy of fit and perfection of color perfectly fulfill the needs of the case. By this method a perfect inlay can be made, and it is one of the greatest of recent improvements in dental practice. It is not a method for the careless man, but any man who is competent to practice dentistry can, with painstaking efforts obtain results which will be eminently satisfactory to both himself and his patients.

DR. C. N. JOHNSON while admiring Dr. Jenkins' clearly defined, easily understood description of his method, desired to utter a word of caution, as it must not be supposed that this method is one to be readily picked up by the average practitioner. There is nothing in operative dentistry that requires such absolute accuracy in the minutest details, as this work. An ordinary operator will have a gold filling completed in less time than is necessary to prepare the cavity and make the matrix for porcelain inlay, and the gold filling has the advantage of a perfect joint as there is no cement to dissolve out. It is there to stay.

DR. JOSEPH HEAD said that as to permanency, we know that inlays have lasted, and do last; even the old glass fillings, which discolored under the action of the saliva, have lasted eight and ten years and bid fair to last as much longer. The average life of a gold filling is not over five years, and why should we ask more from porcelain inlays? As to the difficulties to be encountered, let any man look back and recall his first gold filling, and he will not expect success for his first inlay. The only question about the Jenkins' porcelain is its durability. It is only two years old in its present perfected form and both the method and material are *on trial* as yet; we are not prepared to pass judgment upon it. It is a low-grade fusing body, and in a gold matrix. The possibilities offered by the platinum matrix, of a second burnishing seems very desirable. When platinum is properly annealed there is no difficulty in obtaining a perfect matrix. With mechanical skill and due care either method will give good results, but in the long run it would appear that a high fusing body in a platinum matrix will give the greatest satisfaction.

DR. GEO. EVANS spoke of the great advantages offered by Dr. Jenkins' material in enameling the labial surface of all gold crowns. The gold crown, with properly strengthened cusps,

offers great advantages in perfect adaptation, and when enameled in the exact shade required, as can be done with the Jenkins Porcelain Enamel, the result compares favorably with the English tooth.

DR. McKELLOPS said that for the corners of front teeth nothing can equal platinum-gold; nothing can touch it. You can't wear it out; with nothing else can you accomplish such grand results. Porcelain inlays can probably be made with greater ease and comfort, but when you want durability, platinum-gold is the thing.

DR. OTTOLENGUI said that it was proposed that in Dr. Jenkins' clinic duplicate cavities be prepared and fitted respectively with inlays made with the Jenkins porcelain enamel, made in a gold matrix, and with a high fusing body in a platinum matrix. Only by such a comparison could the question of relative superiority be definitely decided.

DR. JENKINS said that the special claim he made for his method was its simplicity, without in any way questioning the fact that equally good results could be obtained by other methods, but at the expense of more time and greater labor. Restorations in porcelain-enamel are the nearest approach to nature possible to dental art.

The Radical Cure of Cleft Palate.

BY TRUMAN W. BROPHY, M.D., D.D.S.

WHILE the methods originating with Dr. Brophy are not yet generally practiced, and have been severely criticised, it is by those who do not fully comprehend them, many of the most distinguished surgeons, who formerly questioned them, being now their most enthusiastic advocates.

DR. BROPHY said that his first cases were undertaken with trepidation as his method was a transgression of all the long-accepted rules of surgical procedure. But the question of early operation has passed the experimental stage. The results of hundreds of operations performed at from ten days of age to three months, have fully justified the practice.

The reasons for operating as early as practicable after birth are—

First, the surgical shock is less, as children react better; all mental apprehension is eliminated, alarm and dread being among

the most powerful factors in producing shock: the nervous system is not well-developed in the infant and they are not capable of receiving the impressions that they would later in life.

Second, before the bones are fully calcified they may be bent or moved without full fracture, and hence the injury is really less than after more complete calcification.

Third, if the muscles are very early brought into action they develop instead of atrophy, and hence a good velum is secured, with plenty of tissue. Later in life, after the parts have shrunk through non-use, they can rarely be made to subserve the same purpose as when developed through natural employment.

It was predicted by eminent surgeons that the upper jaw being reduced in breadth, as the result of Dr. Brophy's operation, it would always remain contracted and the superior teeth erupt, if at all, within the inferior arch; but it has invariably been the case that the arch has spread, and then assumed nearly or quite their usual relations, all the tissues developing according to accepted types. A fourth great advantage is that the operation being performed before faulty habits of enunciation have been acquired, normal speech is assured. The operation upon the palate should always be made before operating upon the lip, thus allowing free access, as all the space that can be secured is required.

The soft bones of the hard palate and alveolar process, of young patients, are easily cut through with the knife. It may be necessary, in order to close the fissure, to divide the mucous membrane and bone through the molar process, dividing a maximum amount of bone and a minimum amount of membrane, the bone being then readily moved toward the median line, and the cleft closed by approximation of the two sides. If the parts are kept antiseptically clean they will unite kindly, and the palate be restored so that its full function may be performed. The alveolar process developing with the teeth is a pronounced factor in the formation of the jaw, guiding the teeth into proper position.

In connection with the reading of this paper, Dr. Brophy had present some of the patients who had been operated upon at a very early age. One, a girl, now ten years old, who was operated upon at the age of ten days, having double hare-lip with a wide cleft of both hard and soft palate. The fissures of

the lip extended into the nostrils, the intermaxillary bone and the central portion of the lip being rudimentary.

Another was a babe of three months, which had been operated upon at the age of three weeks for single hare lip and cleft palate. This little patient is a brother of the girl first mentioned, four of six children of the parents being affected. Of the six children, the oldest was entirely free from deformity. The girl, above-mentioned, was the second born; the third had a hare-lip; the fourth a double hare-lip and cleft palate; the fifth child had no deformity; the sixth being the babe presented. The paternal grandfather was similarly afflicted, confirming the opinion that nearly all such cases are of hereditary origin.

DISCUSSION.

In the discussion of this paper Dr. W. C. BARRETT said that if dentistry had never given anything to the world but this operation for the radical cure of cleft palate, dentistry would be immortal. It is an operation that stands on its merits and claims the approbation of the world. It is the very climax of all operations in the cases to which it is adapted. By the operation the vault is necessarily very much reduced in breadth, but by some mysterious operation it expands and the deciduous teeth erupt normally and in nearly if not quite complete occlusion. It takes on the type of normality and the child speaks plainly.

Dr. M. H. CRYER said that at an appropriate time he would demonstrate why the jaw is not narrowed by this operation. The jaw is normally smaller in infancy and old age; the spreading is done by the bone which carries the teeth.

A Resume of the Important Changes that have taken place in Dentistry during the last Thirty-five Years.

BY DR. J. N. CROUSE.

In this paper Dr. Crouse reviewed briefly the methods in vogue before the introduction of the rubber-dam, the use of cohesive gold and the mallet, and the invention of the dental engine.

He described the Arthur system for the prevention of decay, and showed the importance of the restoration of full contour, although shallow cavities in the proximal surfaces of the six anterior teeth may often be advantageously obliterated by judicious

cutting from the proximo-lingual surface. In the majority of cases decay will not occur. He briefly reviewed the work of Dr. W. D. Miller in the discovery of the real causes of dental decay; also the "New Departure" theories. The conclusions drawn by Dr. Crouse from his review of the past thirty years are—

First, that the practice of filling with non-cohesive gold, in the form of cylinders, is too valuable to be abandoned, especially at the cervical margins of large proximal cavities.

Second, that heavy gold can be packed in a cavity more uniformly, and with less pressure than lighter gold matted into blocks.

Third, that when the ravages of decay are the most active, and the walls very frail, gold is the most valuable material to use.

Fourth, that in very many cases gold is not so desirable; not because the teeth are too soft, but because the peridental membrane is likely to be disturbed and injured.

Fifth, that it is wise practice to protect the danger points by extension of the cavity when decay is likely to occur beyond the filling.

Sixth, that the occluding surface is impaired by open spaces; this should be overcome by contouring.

Seventh, that the great question yet unsolved is to ascertain the cause of dental caries; what conditions cause the radical difference in different mouths, or in the same mouth at different times.

DISCUSSION.

DR. S. B. PALMER having been called upon to open the discussion of this paper, said that in teeth where the dentin is undeveloped and receiving support from the pulp, the conditions are changed in the presence of gold; the condition becomes abnormal; the dentin ceases to calcify in contact with a filling which is a non conducting medium. Gold does not have this effect in a tooth of mature normal structure, but in teeth of a low grade, with highly organized dentin, calcification is checked; calcic deposits cease, and decay continues around the filling. Under proper conditions gold preserves the tooth, but not in the conditions named.

DR. G. V. BLACK said that the welding property of gold

should be thoroughly studied by every student in our dental schools. Chemical experiments should be made and our younger men given a better understanding of the properties of gold. There is much in the old books which is worthy of careful study, and unless we connect the present with the past, we cannot judge what are the waste products of thought and what holds good. The present is but the past made more perfect.

DR. J. Y. CRAWFORD said that the study of the etiological factors in caries—this disease which has the elements of infection and contagion, and which will yet yield to the great law of immunity; we must settle, if possible, the etiological significance of caries, and its therapeutics, from the standpoint of the law of immunity. We know that there is such a condition as partial immunity, and if partial immunity is possible, perpetual immunity must also be a possibility.

DR. C. E. KELLS spoke of the importance of carefully preparing cavities which are to be filled with amalgam.

DR. McKELLOPS spoke of the value of a foundation of oxyphosphate cement if you are going to use amalgam at all. Decay will not recur under oxyphosphate if it is properly put in.

DR. H. B. NOBLE described a case in which the Arthur system was adopted with good results—a shallow cavity in a left superior lateral which was dressed down for the lingual surface in 1854. He was threatened with a suit for damages for having cut away a portion of the tooth, and Dr. Maynard and other eminent dentists of that day thought he had done wrong. The result has justified the means for that tooth is perfect to-day, while other teeth in the same mouth, filled at that time, have been filled and refilled and are badly broken down.

DR. W. C. BARRETT said that as he grows older, and perhaps lazy, he finds that he can satisfy his patients, and his own conscience, with other materials than gold, and believes that he has done his full duty when he preserves the integrity of the tooth, though gold is, after all, the only thing that really satisfies the inmost longings of the soul of the honest dentist. But there are many cases where we should use the next best thing, and that is, the plastics renewed again and again.

DR. CROUSE in closing the discussion of the paper said the discussion of the cements was not one of the objects he had in view in writing the paper, as that subject would come up later in

connection with other papers. But he wished to emphasize his first proposition—that “cylinder filling” is almost a lost art, but one that deserves to be revived. He wished to make a special plea for the use of gold in the most difficult cases. When we have frail walls, there we want cohesive gold. There is nothing like gold to keep the profession up to the standard as skilled operators. As regards cutting away superficial decay, Dr. Crouse said that he recently removed a lateral and a central incisor from which twenty eight years ago he filled one side and cut away the other. The filled cavities have had to be refilled but the side that was cut away has never decayed. He said—in all my experience there has not been, to my knowledge, a recurrence of decay when it was early removed by cutting away and polishing the surface. It don’t come back.

(To be continued.)

ALL SORTS

Neuralgia from Pulp-Stones.—A Case in Practice.

A man of fifty-five years of age was brought to me for consultation by his dentist. He had suffered much from neuralgia of the left side of the face and head, and had been treated by his dentist, by a consulting oral surgeon, and by his physician for a month or more. There had been an unusually severe attack the previous day. Examination showed that all the upper teeth had long since been removed, and that all the teeth in the lower jaw, with the exception of the second molar, were devitalized. The roots of the incisors, left cuspid, and I think those of the left bicuspids had been amputated. The wound, although not healed had a healthy appearance.

My first thought was that such pain, if caused by a tooth, was due to one with an irritated pulp, and the second molar was the only tooth on the left side of the lower jaw which contained a live pulp. Rubber dam was applied and a stream of hot water was played on the tooth for two or three minutes without any sensation. Shortly after removing the dam the patient said that I had started the pain.

Cold water for a minute or two gave relief. In reply to questions the patient said that the pain often began during a meal, after exertion, and in the evening. The tooth was drilled to the pulp-chamber and arsenious acid applied. His dentist resumed the treatment, and I was

informed that there had been no return of the pain after the application of arsenic, and that the pulp and several pulp-stones had been removed.

The point which I wish to make is, that the application of heat should be made for two or three minutes or more instead of but for an instant. I have had several similar cases where the application of heat for a few minutes has been a great aid in establishing a diagnosis.—S. H. McNAUGHTON, *Welch's Magazine*.

Excellent Combination Filling.

For the last two years I have been experimenting to find the "ideal" filling so long talked about in our meetings. I do not mean to say it is found, but will give the result of my efforts.

Mixing my cement with various quantities of alloy, I finally hit on this. On a pad was placed two equal piles of material, one amalgam, the other cement; also acid Q. S. The alloy was *first* mixed with the liquid. Why? To be sure that the metal becomes thoroughly coated with the liquid. No fear that the cement would finally mingle with the acid, and also form perfect union with the metal. Next mix the zinc powder with the wet alloy, working it up to a tolerably stiff mass. It may be said, by the way, that there is *much* in spatulating cement. It should be so done that all parts be thoroughly incorporated.

The mass hardens quickly, and so has to be handled with expedition. Sometimes I put a part of the softer mix into the cavity, following with the stiffer. In this way I get more adhesion with the one, and strength with the last. A surplus is put in while an instrument dipped into the powder can be used to contour the filling to the edges. A matrix is also used slightly oiled, when it is desirable to do so.—F. B. SPOONER, in *Items*.

Root-Canal Filling.

A proper combination and manipulation of oxychloride of zinc cement, low heat gutta percha and electrozone will give a filling which fulfills all requirements. First wind two or three fine broaches or old Donaldson bristles with shreds of cotton and lay them on the operating table beside a mixing slab on which is placed two or three low heat gutta percha cones, one drop of electrozone (concentrated) and the proper proportions of liquid and powder of the cement. Next, having the canal dry, incorporate the cement powder with electrozone and add sufficient of the cement liquid to make a creamy paste, which is immediately picked

up by one of the cotton twisted broaches and pumped into the canal, repeating this until there is a slight inclination of pain, or until you are confident the filling has reached the apex. Follow this with one of the gutta percha cones very slightly warmed on a canal plugger and the work is done. The combination of the cement with the electrozone hastens the elimination of chlorine and other sterilizing gases which more or less permeate the dentine. This combination also prevents the cement from setting hard. The pumping process insures the cement reaching the apex and the lining of the sides of the canal to which it will adhere. The packing of the low heat gutta percha compresses the cement, forcing it still more into place in every direction and also leaves a gutta percha core to facilitate removal should it ever be necessary. The beginning of the canal should be large enough to give the broach-piston proper play, while the remainder of the canal need only be enlarged sufficient to admit the finest Donaldson cleanser.—G. W. KNIGHT, *Items*.

The Stockwell Method of Root Treatment.

First remove all *debris* as thoroughly as possible, repeatedly inject peroxide of hydrogen, waiting each time till bubbling ceases, then absorbing it and applying more until not a single bubble appears; if a fistula exists get the remedy through it. Next, dry the cavity thoroughly and flood canals with bichloride of mercury 1 to 1000; after a few moments remove the surplus and thoroughly bathe with Sander & Sons' eucalyptol, making that the vehicle for a considerable quantity of iodoform. I then dip fine points of gutta-percha into a solution of eucalyptol and iodoform and fill the roots with them. I consider it very important to get Sander & Sons' preparation of eucalyptol.

I attribute the good results, first, to the cleansing action of peroxide of hydrogen, and, secondly, to the strong and persistent antiseptic properties of the root-filling. Were I to leave the iodoform and eucalyptol out of the filling, I should not expect to succeed as I do.—*International*.

Combining Gold and Tin-Foils.

I am accustomed to make this combination by folding the two foils in such a way that the tin will be equally distributed throughout the gold. To do this I fold a quarter of a sheet of soft gold over twice, which gives four layers as fold. I then place on the folded gold a strip of tin-foil of the same length as the gold, but somewhat narrower, so

that the proportion of tin shall be about one-sixth of the whole. I then fold the gold over the tin a sufficient number of times to have the strip the width required. For small cavities I would use a sixth of a sheet of gold, and, consequently, less tin, and fold the two metals together in the same way. By this combination I contend that we get greater softness, toughness, more certainty in the welding, and, when properly packed and condensed with suitable instruments, greater solidity; and as a consequence, the margins are stronger. Such fillings will wear longer and preserve the teeth, or rather prevent further decay, with more certainty than those made all of gold. An amalgamation of the two metals takes place at some period after their introduction.

I consider this combination very suitable for the labial surfaces of the front teeth, though with a less proportion of tin, say about one-tenth, as the color is less conspicuous than gold. Too much cannot be said in favor of the combination of tin and gold, in proper proportions, and I believe that a thorough trial will be convincing as to the correctness of my views on this subject.—BENJ. LORD, *International*.

A Method of Crowning with Amalgam, Roots of Multi-Rooted Teeth which have Become Separated by Decay.

Take for example a lower molar. First expose the ends of the roots by packing with gutta-percha for a few days; remove the decay, disinfect and fill the root canals.

If not already so, the axis of the roots may be made parallel by screwing into the roots a ring bolt, and drawing them together with ligatures or small rubber bands; or they may be separated by packing cotton between the rings.

When in position make two staples of round iridio-platinum wire, thread-cut, if desired; one to reach from the lingual canal of the mesial root to the distal canal, which should be broadened lingually to receive it. The other from the buccal canal to the distal canal, which should be broadened buccally to receive it. They should extend as deeply as the conditions will allow, and be as high as the articulation will permit.

Pack the space between the roots with stopping and place on a matrix to include both roots. Personally, I prefer the Lennox, sold by Claudius Ash & Sons. Dry the ends of the roots and pack in amalgam solidly, using at first pelets as dry as can be made by the combined pressure of the thumb and forefinger of both hands, and complete with amalgam wrung out dry by means of the mercury expressor and chamois. Remove the matrix and carve the cusps as desired. After the amalgam

has set, remove the crown and trim to the circumference of the roots, which will be plainly indicated if the amalgam has been properly packed. Cut out the amalgam from between the roots sufficiently to make a cleansing space and polish. Secure the crown to the roots with cement or gutta-percha as desired.—DR. E. S. FULLER, in *Items*.

To Replace Fractured Porcelain.

A straight-pin tooth is selected and backed with 26-gauge gold or platinum plate, the holes in the backing are deeply countersunk, the pins cut nearly flush with the backing, and the tooth with the backing on, but not fastened ground to fit the piece. They are then removed and the cutting edge held against the flat side of a stone and ground square across. A flat piece of gold plate is then fitted to the cutting-edge and allowed to extend a little beyond all the margins. Twenty-two-carat solder is flowed over one surface of this in sufficient quantity to form the cusp. It is then placed in position on the tooth, waxed fast to the backing, and the two removed, soldered together, replaced on the facing, the edges ground flush, and the cusp formed. The facing is then laid aside, and the backing, with cusp attached, is placed in position on the piece in the mouth and a hole drilled through the backing and piece from without inward; the hole in the backing is countersunk in the surface next to the porcelain facing, and a threaded gold wire, the same size as the drill, is passed to place and fastened to the backing with a drop of sticky wax. It is then removed from the mouth and soldered in position on the backing, the surplus of pin and solder are ground away to allow the porcelain to go to place, the porcelain is placed in position on the backing, the surplus of pin and solder are ground away to allow the porcelain to go to place, the porcelain is placed in position on the backing, the pins riveted and, after investment, soldered fast. As the threaded pin fits the hole in the pin tightly, the serrating of the sides of the hole with a wheel bur to give a cling to the cement is all that is necessary, and the simple cementing of the piece with a creamy oxyphosphate of zinc gives all the hold required. The grinding off of the protruding pin after the cement is hard reinforces this, however, by upsetting the thread and forming a slight rivet.—R. M. SANGER, in *Cosmos*.

A Case in Practice.

To make ourselves a little more plain, we will note a case such as you may have seen and failed to succeed with. Lately a dentist sent us

a patient that he had treated, but without success. The tooth was a second bicuspid, and very loose. We saw a fistula near the margin of the gum, so probed it and found a discharge such as we have described. We first dressed the disordered territory with an obtunding medicament, and by treating enlarged the opening enough to remove all of the disturbed hard tissue with a bur. Leaving this for twenty-four hours, we devitalized and removed the pulp, opened the foramen and forced our medicine into any disordered territory that might be remaining, filled the pulp canal and crown cavity, and awaited the results, which proved absolutely successful. The tooth, after two months, is seemingly as firm as ever, and we think it proves the thought given above, namely, that there is some pathologic condition that produces the continuation of pus formation, and that ultimately becomes ichorous and causes the dissolution of the apex of the root, which we call, rightly or wrongly, absorption. Further thought and practice will confirm or deny what we have presented.—G. A. MILLS, *Dental Digest*.

Improper Methods of Filling as a Cause of Pyorrhea Alveolaris.

Three quarters of the cases, I believe, come from improper methods of filling teeth, without observing the contour of the tooth as it originally was, and leaving faulty approximal spaces into which food can be crowded. Malocclusion is also a very powerful cause, and it is my invariable practice, after having thoroughly cleansed the teeth, to take impressions of the mouth and study the articulation. Ninety per cent. of these cases can be cured by looking to these details. After thoroughly cleaning the teeth and taking your impressions, leave the pockets alone. There is nothing so sure to keep up the trouble as frequently poking instruments into these places.—W. G. A. BONWILL, in *Dental Clippings*,

BRIEFS.

Treatment of Temporary Teeth.—It is a favorite plan of ours in treating the back temporary teeth to make use of a solution of silver nitrate, covering it and bridging two proximal cavities with pink gutta-percha.—T. F. Chupein.

Canada Balsam for Fixing Inlays.—Inlays of porcelain treated

with Canada balsam dissolved in benzol are much more durably fixed in position than when bedded in a film of oxyphosphate, provided an accurate fit has been obtained.—*W. Booth Pearsoll.*

Zinc Dies.—After zinc dies are cast they should be thoroughly annealed before use in an oven of similar contrivance until they are too hot to hold in the hand. This makes them very much tougher and stronger than unannealed zinc dies.—*Ash's Quarterly.*

Do Not Use a Screw Drill in Root Canals.—If a root drill has any spiral or screw in it it will be sure to break the shank of the instrument, leaving the point in the hole. I think, therefore, one should never use a screw drill.—*Dr. Humby in The Dentist.*

Use of Vopocaine.—I have used vopocaine with a good deal of success. By placing it in a cavity and tying a rubber-dam around it, leaving it there for the heat to expand, I have had better success than in leaving it exposed to the air.—*Dr. Van Vleet, in Cosmos.*

A Dressing Carrier.—For carrying dressings and absorbents for wiping out canals, I always use fine watchmakers' broaches; they are three-sided, and a fine size, which goes easily into any canal into which a fine Donaldson has penetrated.—*T. A. Coys, in The Dentist.*

Stuttering Cured by Insertion of Artificial Teeth.—Dr. F. Winter, of Canton, Kan., reports a complete cure of stuttering in the case of a man, who had suffered from childhood. The happy result was effected after the insertion of a full upper set of teeth.—*Items of Interest.*

Examinations Without Fees Demoralizing.—The custom of making examinations without fees, which is still largely followed, is demoralizing in its tendencies both to dentist and patient, and should certainly be discontinued in the best interests of all concerned.—*The Dentist.*

Soldering.—Dry the investment slowly until all traces of moisture are driven off, then increase the heat until the investment is as hot as it is possible for it to get over the gas heater, transfer to an asbestos block, solder, and cover with another asbestos block, and leave until cold.—*Cosmos.*

Simple Test for Good Plaster.—The quality of plaster may be tested by simply squeezing it with the hand. If it cohere slightly and keeps in position after the hand has been gently opened, it is good; but if it falls to pieces immediately, it has been injured.—*Australian Journal of Dentistry.*

Gold Caps for Broken-Down Deciduous Teeth.—It is good practice to place short gold caps—mere caps—over broken-down decidu-

ous molars, or even incisors. They can be made to serve a good purpose for mastication for the few years these teeth remain. *A. H. Thompson, Welch's Magazine.*

Bibulous Paper for Root-Canal Drying.—I should also like to suggest the use of bibulous paper for wiping out and drying canals. A very thin piece of it takes up little room, and can be carried on one's broach as far as the broach itself will go; and yet has great absorptive power.—*T. Coysh, Jour. Brit. Asso.*

Polishing Crowns.—To prevent marring a gold crown when polishing, wet inside with soap solution, fill it with modeling composition and while the latter is still soft thrust the end of a stick or instrument handle into it. When the crown is finished soften the composition in warm water and remove.—*Dental Hints.*

Strengthening a Plate.—Let the lower edge of a partial lower plate be nearly an eighth of an inch thick, well rounded, then concave the body of the plate till the edge next to the teeth is nearly as thin as a visiting card. In the thick portion place the strengthening bar; the latter may be easily curved to the surface of model by rolling one edge thinner—through a rolling mill.—*Dental Hints.*

To Prevent the First Shock from Use of Ethyl Chloride on Dental Pulp.—I get rid of that entirely by first syringing the cavity out with warm water, and preparatory to applying the spray I apply alcohol first, and then vopocaine, and you so anesthetize the surface upon which you want to apply the chloride of ethyl that the shock will not be appreciable.—*J. D. Patterson, Western D. Jour.*

Use of Carbolic Acid in Tooth Sockets after Extraction of Abscessed Teeth.—In preparing a mouth for artificial dentures, the free use of concentrated carbolic acid in the painful or abscessed sockets, and the rinsing of the mouth with water as hot as can be borne, to which some tincture calanduke has been added, will greatly assist Nature to perform her most important part.—*C. P. Humbley in Items.*

Soldering Thin Gold Plates.—Dr. Herbst now prepares gold plates for dental purposes by uniting two thin plates by the addition of a thin layer of solder between the two. In making a band or a cap for a crown, he brings the free margins in proper position, paints a little borax over the joints and holds in the flame of the Bunsen burner. The solder between the plates will unite the ends securely.—*Brit. Journal.*

Plaster of Paris Impressions.—In taking Plaster of Paris impressions, let the patient thoroughly rinse out the mouth with a little milk,

immediately before the tray is inserted, and then there will be no need to use vaseline or glycerin, either of which is objectionable to many patients. Mr. H. W. Greenfield, of London, to whom we are indebted for the hint, informs us that he has employed this simple method for many years with the greatest success.—*Ash's Quarterly*.

Exposing the Cervical Margins.—I am accustomed always to get as full an exposure of the cervical margins as possible before operating by packing the cavity and against the gum with gutta-percha, with the surface moistened with oil of cajeput to make it stick, leaving it for a day or two. The gutta-percha may be made to stay in place, if other methods are inadequate, by tying floss silk across the tooth and over the filling.—*J. F. P. Hodson, International Dental Journal*.

Why Crowns Should Not be Placed Over Teeth with Live Pulp.—It has been my experience that a tooth that has been entirely denuded of its enamel, exposing the dental fibrils ramifying on the surface of the dentine underneath the enamel, is subjected to such irritation from that grinding that will result in pulpitis of the chronic character at the end of one or two years, and end in death of the pulp either with or without infection.—*C. L. Hungerford, Western Dental Journal*.

To Convert an Old Plate into a New One Without Changing the Articulation.—Dr. Lossing's method is to take impression and a correct bite, run models and place on an articulator. Cut away all the old rubber except enough around the pins to hold the teeth in position, articulate them to the opposite teeth just as you want them, or any changes you might deem advisable can be made. Holding them in position, wax to model, invest and pack the same as in making a new set.

Become Popular with Children.—Become popular with children and you become popular with parents. The dear little innocent creatures will know no better than to tell all their little companions what a nice man you are, and how little you hurt, and show with pride a filling you may have inserted. And they will tell their older brothers and sisters, and in many ways become living advertisements in spite of your determination not to be an advertising dentist.—*T. B. Welch, in Welch's Mag.*

A Gold-Saving Drawer Tray.—Mr. T. C. Howcroft, of Uttoxeter, has designed a gold-saving drawer tray, and the invention can be utilized either in the workshop or the operating room. By the action of shutting the drawer the filings fall backwards and fall into a receptacle. There is also a transverse guard which separates scrap and other larger portions from the filings. Dentists are obliged to pay attention to details, and this is perhaps one which should not escape attention.—*British Jour.*

How to Support Plaster Teeth on the Model.—When the gold shells are fitted over the teeth, or roots, in the mouth and are brought away in the plaster impression, before filling this impression with plaster and sand to make the model, pieces of iron wire are bent so as to enter these shells and protrude above them about a quarter of an inch, in order to prevent the plaster teeth breaking off from the plaster and sand model while the work is in process of construction.—*T. F. Chupein, in Off. and Laboratory.*

Care in Finishing Buccal and Lingual Fillings.—Care should be exercised in finishing these fillings to avoid as largely as possible any undue laceration of the gums. Some slight irritation of the free margin of the gum is often unavoidable, and need not be considered serious, but when the gum is badly cut or torn it is not always reproduced in as perfect a condition as it originally was, and the healing is sometimes a slow and discouraging process. With ordinary precaution the gum may be so protected from injury as to entirely recover from the operation in a day or two, and lap over the cervical portion of the filling in a healthy pink condition.—*C. N. Johnson, Cosmos.*

A Simple, Easy and Efficient Method of Producing Smooth Borders.—Take an ordinary fine cut plug finishing bur of suitable size; dip it in water and then in coarse carborundum powder; use it in the usual way, dipping it in the water and then in the carborundum powder as often as necessary. I use half worn out burs. Prepare margins in this way and examine them with a magnifying glass. This is a faster method than using diamond burs. It is so simple that I should not be surprised to hear that it has been practiced by others; as, however, I have no knowledge of this, and as it is far in advance of anything I have used, I think it worth while to put it on record.—*W. C. Graystone, in Items.*

Lateral Strain a Factor in Bridge Failure.—Another reason for failure in bridge-work is because only the strain of direct occlusion is taken into consideration, and no attention is paid to the lateral strain, which is far greater than when the jaws are in their normal position. When the cusps of the upper molars and bicuspid come in contact with the same in the lower jaw in the process of mastication, while sliding in place in the sulci, it is in that movement that strain is caused. If this fact regarding the comparative strain is true, how can we expect the saddle bridge, which rests only on the top of the ridge, not to bring strain on the attachment teeth when the jaws are used in lateral motion.—*A. S. Condit, Cosmos.*

How to Check Hemorrhage from Nerve Extraction.—After you have taken out the nerve, you all know there is a severe hemorrhage. Take upon your broach a little pledget of cotton, dip in Pond's Extract and pump it up there just a moment or so and take it out, and you will find it saturated with the bloody matter from the tooth; take a second piece likewise saturated and insert it, and you will find there is hardly any hemorrhage left; and you can make a third application of the extract, and you will find there is not a trace of blood left; then apply your absolute alcohol, and dry the canal with the air-blast thoroughly, and your tooth is ready for immediate filling.—DR. HUNGERFORD, in *Western Dental Journal*.

SOCIETIES.

Board of Dental Examiners of the State of Ohio.

THE next meeting of the Board of Dental Examiners will be held at the Chittenden Hotel, Columbus, beginning the last Tuesday in November. Applicants for examination should secure blanks and make all arrangements by Nov. 20, 1899.

Address, L. P. BETHEL, *Sec'y*, Kent, O.

Ohio State Dental Society.

THE next meeting of this society will be held at the Great Southern Hotel, Columbus, Dec. 5-6-7, '99. The meeting promises to be one of unusual interest and all members of the dental profession are cordially invited to attend.

ESSAYS.

President's Address, L. P. Bethel.
A Hydro Chemical Theory of Sensitive Dentine,
G. S. Junkerman, Cincinnati.

INTERESTING CASES IN PRACTICE.

Third Superior Molar in Antrum of Highmore,
J. K. Douglas, Sandusky.

- Dental Diseases in a Child, . . . H. C. Matlack, Cincinnati.
 J. W. Van Doorn, (subject to be announced) . . . Cleveland.
 L. E. Custer, (" " ") . . . Dayton.
 Inverted Third Molar, . . . G. D. Edgar, Defiance.
 Japanese Dental Art, Ancient and Modern—Illustrated by Specimens, . . . T. A. Long, Philadelphia.
 Lecture and Demonstration of Roentgen Rays Applied to Dentistry, (illustrated with stereopticon,) Weston A. Price, Cleveland.
 Reflexes between the Teeth and Eye and Ear, H. J. Custer, Columbus.
 Alkaline Saliva, . . . M. H. Fletcher, Cincinnati.
 A New Form of Clamp, . . . H. F. Harvey, Cleveland.

CLINICS—OPERATIVE.

- E. D. Scheble—Gold Filling by Hand Pressure.
 C. I. Keely—Tin and Gold Filling.
 J. R. Owens—Contour Fillings with Woodward Matrix.
 G. W. Woodbury—Immediate Pulp Removal.
 D. H. Sullivan—The Preparation of Sensitive Teeth for Filling, by use of Nitrous Oxide and Chloroform.
 W. H. Hayden—Electric Water Heater and Gold Plating.
 L. L. Barber—Gold and Platinum Filling with Electric Mallet.
 C. R. Butler—Gold Lined Tin Filling.
 W. T. McLean—Difficult Filling by use of Automatic Plugger.
 Otto Arnold—Pressure Anesthesia for Immediate Pulp Removal.
 Hamlin Barnes—Dr. Fell's Method of Forced Respiration.
 Ira Brown—Phagedenic Pericementitis.
 David Stearn—Devitalizing and Bleaching with Electric Current.

SURGICAL.

- J. R. Bell—New Instruments for Removing Soft Tissue from Partially Erupted Teeth.
 H. C. Matlack—Opening Antrum with Surgical Engine.

PROSTHODONTIA.

- W. T. Jackman—Putting on and Baking of Body and Enamel for Continuous Gum Plates (using electric furnace).
 H. A. Moyer—Something Novel in Shot Swaging.
 W. O. Hulick—Crown and Bridge Work.
 S. M. Weaver—Novelties in Crown and Bridge Work.

W. T. Born—Attachment of Clasps for Plate Dentures.

J. B. Snyder—Impressions.

S. D. Ruggles—The Use of Pure Gold Wire in Crown Work.

J. F. Stephan—Preparing Roots and Fitting Bands for Crowns.

ORTHODONTIA.

V. E. Barnes—Impressions and Casts for Use in Orthodontia.

W. S. Locke—The Making of Regulating Appliances.

METALLURGY.

E. B. Lodge—Repairing and Tempering Instruments from Old Excavators.

L. H. McDonald—Subject to be announced.

A. A. Kumler—Refining and Rolling Gold.

OUR AFTERMATH.

A NEW DENTAL MAGAZINE.--Dr. T. B. Welch is in the editorial harness again and is editing *Welch's Dental Magazine*, a monthly journal published by the Dental Century Publishing Co., Madison, Wis.

DR. W. G. A. BONWILL DEAD.--The news of the death of Dr. Bonwill came after we had gone to press last month. He died at his home in Philadelphia Sept. 25, 1899, aged 61 years. Dr. Bonwill was well and favorably known throughout the profession, and his inventive genius gave to dentistry many useful ideas and appliances.

HONORS FOR DR. LOUIS OTTOFY.--Since Dr. Ottofy left Chicago to make his home in Japan, he has been elected to the presidency of the American Dental Society of Japan, appointed secretary of the committee of organization at Japan for the Dental Congress to be held in France 1900, and we now notice in *L'Odontologie* that he has been added to the list of collaborators of that publication.

DR. HASKELL TEACHING IN PARIS.--Dr. L. P. Haskell and G. A. Yant of Chicago, says *L'Odontologie*, Sept. 15, 1899, have been authorized by the Dental School of Paris, to open a course of instruction in operative and prosthetic dentistry. The course to begin Sept. 15th and continue 15 days, and to consist mainly of metal work, porcelain, continuous gum, bridge work, etc.

A GOOD CHRISTMAS GIFT FOR THE CHILDREN.--In buying Christmas Books for the children, remember that among the best is Dr. Newkirk's "Rhymes of the States," with prose descriptions.

Illustrations by Harry Fenn and published by the Century Company.

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CONTRIBUTIONS.

A Dental Mouth Lamp and its Construction.

BY DR. W. B. FAHNESTOCK, CINCINNATI, OHIO.

A MINIATURE electric light for illuminating the mouth is a great aid in making thorough examinations of the teeth, also in cleaning the labial surfaces of the lower front teeth, detecting devitalized teeth and for illuminating root canals, especially those of the anterior teeth.

To obtain the best results, darken the room (the darker the better) and place the lamp in the mouth—all vital teeth become surprisingly translucent, while any devitalized teeth will appear much darker than the rest. Cavities between the teeth can be plainly seen by the shadows that they cast and opened root canals can be nicely illuminated by holding the light near them in the region of the apex of the root.

This is especially advantageous when reaming out a canal to receive a crown post, for the light transmitted through the tissues allows one to drill out the canal perfectly without danger of going through the side or beyond the apex.

The electric mouth lamp has never come into common popularity chiefly because the majority of dentists do not believe that it has sufficient practical value to justify the necessary outlay of cash, which is any where from five to twenty-five dollars, there-

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fore it is my purpose to give directions for the construction of a simple and practical mouth lamp that will cost about two dollars and a few hours spare time.

In the following I will give two methods of obtaining the supply of electricity. The first will be from batteries, the second and better way is from the current that is supplied for the regular incandescent electric lights. If batteries are used be sure to buy a *battery* lamp; if the regular current is used buy a *miniature series* lamp. Procure the following materials:

1 one candle power electric lamp,
(The bulb shape is best adapted to our purpose).

1 piece of brass pipe $6 \times \frac{5}{16}$ or $\frac{3}{8}$ outside diameter.

1 foot insulating tape.

Sufficient electric light cord to reach from head rest on chair to source of current.

Then proceed as follows:

Push back, or with a knife cut half inch of insulation from the four ends of the electric light cord and join the bare wires at one end to the two wires that project from the miniature lamp (Fig. I A) with soft solder (Fig. I D). Keep the ends separated a little and

cover each with a good coating of melted shellac up to the glass bulb, so that they will be well insulated from each other and from the brass pipe that will later contain them. Ream out one end of the brass tube so the glass bulb will set flush and snugly into it (Fig. I B) and bevel the opposite

end of the tube from the outer towards its inner edge to give it a neat finish.

Draw the electric cord through the tube so that the bulb will set in its proper place (Fig I B), draw out again just a little and

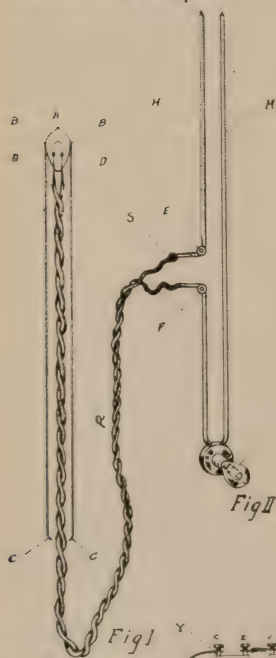


Fig I

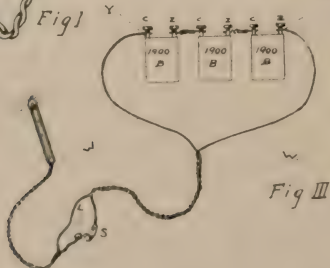


Fig II

fill this end of tube with soft cement, press bulb in again and hold in place until cement is set, after which you are ready to make connections between lamp and course of current.

Three cells of 1900 dry battery will be sufficient to light the lamp brilliantly. In making connections attach one end of one of the E. light wires to the zinc of one battery and the other end of the E. light wire to the carbon of another battery (Fig. III x and y), then join the three batteries by short wires connecting the carbon of one with the zinc of the others, until the circuit is completed. Of course when lamp and battery are connected in this way, the lamp will burn until the connection is broken. This can be done by disconnecting one of the wires leading from battery to lamp (as for instance, the wire "w" can be disconnected from "c" at "y" in Fig. III) or a simple lever switch (Fig. III "s") can be interposed between the battery and lamp, that will make and break connections through *one wire only*. This will be found more convenient than having to disconnect at battery when not in use.*

Conceal the batteries in a little drawer or in one of the compartments of the instrument cabinet. The switch "s" (Fig. III, details of construction being illustrated in Fig. IV) should be fastened at some convenient place on table or cabinet as the case may be. Now we will look at Fig. II, which represents the wires "h" "h" that convey the ordinary street current to and from the regulating incandescent lamp "w" fastened against the wall and also showing method of connecting the miniature lamp in series with lamp "w".

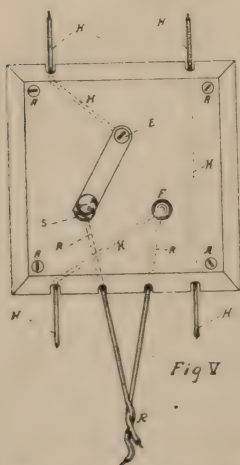
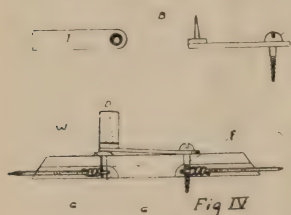
At some convenient place cut about an inch out of one wire "h" (Fig. II) at "E" "F". Remove sufficient insulation from the cut ends and solder the ends of wire "R" (Fig. I) to them as in Fig. II "E" "F". Wrap a little insulation tape around the joints covering the bare parts completely. Now turn the key which lights lamp "w" and the miniature lamp will burn brightly in series with it, unless the miniature lamp requires a greater amperage or quantity of current than the lamp "w". In this

*In Fig. III "B B B" are three cells of "battery"; "C" carbon and "Z" zinc posts where connections are made; "W" wires leading to lamp "M," one of which has been cut, where switch "S" has been interposed. Fig. V represents switch open. For enlarged sectional drawing of switch see Fig. IV. Turn lever to "L," and light will burn.

N. B. See that all joints between ends of wires, screws, tacks, etc., are fastened well with tinner's solder, for a loose connection will cause sparking with intense heat that may set fire to any woodwork in close proximity.

case it will be necessary to remove the ordinary 16-candle power lamp, which will give the required amperage and cause the miniature lamp to burn brightly.

As there may be times when light from the larger lamp alone is desired, a two way switch placed at the points "E" "F" "S" (Fig. II) will make the large lamp independent of the smaller. Such a switch can be purchased for thirty or fifty cents in an electrical supply house, or one similar to that at "S" (Fig. III) can be fastened by a screw or pivot at "E" so that it can be made to connect "E" "S" or "E" "F" at pleasure.



To make a switch proceed as follows: Procure a piece of clock spring or stiff sheet brass $\frac{3}{8}$ inch wide by $1\frac{1}{2}$ in. in length. With a large round bur make a hole at one end (Fig. IV "I") large enough to admit the passage of a rounded head-screw (Fig. IV "C"). At the opposite end fasten with tinner's solder a tack with the head against the flat surface of the metal (Fig. IV "B"). Whittle out a little knob of wood and press it on the tack up to the head, which will make a handle to move the lever (Fig. IV. "D"). Saw a block of wood $3 \times 3 \times \frac{1}{2}$ in., bevel edges or not to suit your pleasure, and screw switch to block as in (Fig. V "E"), drawing screw up moderately tight to hold switch lever closing against block. Move lever describing with its free end a portion of a circle. Upon the curved line $\frac{1}{2}$ in.

to the left of the center line of the block, drive a brass upholstery finishing tack having a rounded head until it rests tightly against the face of the block, so that the free end of the lever will rest firmly upon it, when desired (Fig. IV "E") Place another tack in the same way $\frac{1}{2}$ in. from the right of the center so that the lever can also rest upon it when desired (Fig. V "F" "S").

Since all wires are to be connected to lever-screw and tacks at the back of the board, grooves and countersunk holes must be provided as in sectional view, (Fig. IV "G") so that the solder-

ing of connections and the wires themselves will not prevent the block from lying flat against the wall where it should be fastened by four screws at the corners (Fig. V "A") This is one way of making a "two way" switch. A simple one way switch for use with the battery, as in Fig. III "S" has the same construction excepting that only one button or tack is required (Fig. IV.)

When it is desired to cut off the current by either switch, turn lever so it does not touch a tack (button). The dotted lines in Fig. V indicate where the wires pass and are soldered to screw and tacks behind the block—also how a "two way" switch can be interposed at the points "E" "S" "F" (Fig. II). The lettering in Fig. II and V correspond. Fig. V shows position of lever when both lamps burn together, by moving lever to button "F" the lamp "W" (Fig. II). will burn alone.

Protection of the Eyes While Soldering.—A Suggestion.

BY W. T. JACKMAN, D.D.S., CLEVELAND, O.

I do not know whether the following suggestion has been published or not, and even though it may have been, it will bear repeating. I have found the practice so satisfactory that I want all others, who have not already adopted it, to give it a trial.

Those who do much solder work will find an immense relief from the glare of the flame by the use of plain smoked glasses when soldering. They should be quite dark, for the glare of the light will enable one to see clearly through glasses so dark that he otherwise could see through but dimly.

I believe we as dentists should protect our eyes in every way possible.

An Effort to Prevent Decay.

BY DR. M. H. FLETCHER, CINCINNATI, OHIO.

THE pressing need of a preparation for the mouth and teeth which will at once cleanse, purify, and arrest decay, has had serious thought with me for years, and for many months past has

been given much attention, with results which I wish to submit to my confreres and friends, many of whom are reached by the OHIO JOURNAL and to whom this letter is addressed.

In this matter it has been my endeavor to supply the desideratum in prophylactic mouth washes, where we seem especially weak. With many of us the sting of chargin has been daily felt when compelled to prescribe as a mouth wash, or dentifrice, something entirely inefficient; and this too, at the portal of the body where the greatest care is needed, and where the greatest possibility of prophylaxis lies.

The keenness of these facts has prompted much effort of recent years, to produce something for use in the mouth which will be efficient, safe and attractive.

As stated, my object has been to cleanse the mouth and teeth mechanically with harmless powder, and at the same time counteract the causes of decay of the teeth; also to assist nature in destroying other disease germs, which inhabit the mouth.

To this end I have adopted a powder made from the hard parts of cereals (as rice and Indian corn), as a mechanical cleanser, and also use it as a menstruum for carrying potassium chlorate and sodium borate, whose medical and prophylactic properties are well known. The powder contains seventeen and a half per cent. of the potassium chlorate; in five grains of the preparation there are three quarters of a grain of the borate, and one-quarter of a grain of the chlorate. The internal dose of the former is thirty to forty grains—poisonous dose 3 to 5 drachms—and of the latter ten to twenty grains—poisonous dose same as the borate, hence its safety in daily use.

It might seem that with so small a quantity little good can result, but clinical experience proves the contrary, especially if used often, as intended.

The antiseptic and prophylactic properties of both of these remedies are well known, as is that of saccharin with which the preparation is sweetened, and the menthol used to flavor.

The object has been not so much to over-power and destroy as would be done with bichloride of mercury or formaldehyde in sterilizing objects externally, but to supply to the saliva and gastric juice that which they seem to lack, in many cases; to enable them to complete their functions, also to keep the saliva alkaline.

As local remedies in lesions of the mouth both are familiar,

and at a glance the rational and beneficial results can be seen which would follow the use of this combination in the treatment of diseases of the gums, or surgical wounds of the mouth.

For tonsilitis and pharyngitis, these are most acceptable remedies, and for fermentative and putrefactive indigestion of the stomach, the combination acts very promptly.

The most satisfactory way to use it for indigestion is in small doses oft repeated, or by allowing a five grain tablet to dissolve slowly in the mouth. Frequent use also insures alkaline saliva.

The remedies in the preparation being diluted by the menstruum provides for its being prescribed for any purpose desired. Each grain of the preparation containing $\frac{1}{4}$ of a grain of the combined remedies, these assist each other in their action, either locally or systemically, each acting as a compliment to the other.

The name Vegetol has been created for the compound as a matter of protection to the manufacturer, and to insure uniform quality and quantity of ingredients; there is no secret about the matter, and I shall be pleased to send sample for test and criticism to any dentist or physician who may choose to apply for it.

Practical Suggestions.

BY P. G. WOOD, D.D.S., CORRY, PA.

STIFFENED POINTS IN ROOT TREATMENT.

STIFFENED points of various suitable sizes, medicated with different remedies prepared ready for use would be very convenient in the treatment of pulp canals, and would save time over the usual method of using cotton.

TO REPAIR BROKEN PINS IN LOGAN CROWNS.

The pins of Logan crowns sometimes break even with the roots. A quick way of repairing, is to take and file the portion remaining in the crown square across and solder to it another piece of platinum pin by investing crown in any investment material preferred. Mellotte's moldine works very nicely and saves time. A low grade of solder, 14 K. is perfectly satisfactory and saves raising to a high temperature. Pins when too soft may be easily strengthened in this way before setting.

TREATMENT OF DEFECTIVE DECIDUOUS MOLARS.

The difficult cases where enamel on deciduous molars is defective producing shallow sensitive cavities, may best be treated by taking pure gold 34 gauge and making a band to fit tooth extending from gum margin slightly above crown. Cut slits in band at the masticating edge, and burnish to fit crown. Now dry tooth and cement on with sticky quick setting cement used thin. Burnish all edges closely to tooth. With small stone, grind to make occlusion all right.

AMALGAM AND CEMENT AS A FILLING FOR DECIDUOUS TEETH.

Cavities in deciduous teeth may often be filled more successfully with combined cement and amalgam filling than in any other way. Cleanse the cavity as thoroughly as possible, dry, and protect the pulp if necessary, then fill cavity partially with a sticky quick setting cement mixed rather thin, and press into it while yet soft a pellet of amalgam mixed soft. Allow cement to harden, after which clean the margins of the cavity and finish with amalgam.

The Use of Gasoline Gas.

BY DR. P. A. GOULD, GIBSONBURG, OHIO.

GASOLINE is largely used by dentists in rural districts in the place of coal-gas, which is available in the cities. As I find myself so located, and just commencing to practice, with small means to buy many necessities, I have made many tools and appliances for my laboratory and saved considerable money thereby. My experience may have some new suggestions in regard to using gasoline that may be of interest to others.

I found myself in possession of an old gasometer, the tanks and reservoir of which were in perfectly good condition. By changing the connections of the inhaling tube for one with two $\frac{1}{2}$ inch gas cocks, with tapered bibs for rubber hose attachment, I was able to use the reservoir for gasoline gas and can force gas into it and be taking it out at the same time. Weights are placed upon the tank so as to give the desired pressure to the

gas, as the success with gasoline gas in a blow-pipe, is in the pressure of the gas.

My blow-pipe, one of my own construction, is made so that it may be used with either gasoline or coal-gas. With gasoline I do not use the pipe which is for the blower but connect my gas with about one to three pounds pressure to gas tube of blow-pipe. Another $\frac{1}{8}$ inch pipe is connected so as to open into this tube back of the valve which regulates the gas in the blow-pipe, so as to have the full pressure from the tank. This pipe extends along the outside of the blow-pipe to the end where the gas escapes, and is kept lighted by a fire from the gas that comes more slowly from the large gas tube and is not blown out.

By regulating the amount of gas which enters the small tube by the pressure from the reservoir, and the amount of gas which passes through the large pipe by a valve in the blow-pipe, you can stand on both feet, with one hand free and regulate the heat on your work with the other.

An ordinary gasometer will hold about three feet of gas, which will be sufficient to flow a very large bridge. If your investment is very large and requires an unusual amount of time to heat, to solder properly, you can use your foot blower, connected to reservoir through the gas generator, and supply as much gas as you may need; but if the reservoir be filled before you commence you will seldom need any extra gas. Gas generators are very simple and too numerous to need explanation, and may be made with very little trouble.

There is an advantage in the use of this gas where a dentist is situated in a large building in a city, and where the elevator is run with air pressure. This can be used in the dental office in various ways, and can be connected to office from the elevator with very little trouble.

In using it in connection with a gasoline apparatus of this description, it can be fixed so as to work automatically, and keep a certain amount of gas in the reservoir all the time. Much care should be taken in the construction of the generator that is to be attached to a source of constant air pressure, for fear of too much gas being generated and escaping, for it is very explosive.

A Few Words in Regard to the Adjustment of the Rubber Dam.

BY E. K. WEDELSTAEDT, ST. PAUL, MINN.

WHILE at a clinic sometime ago somebody requested me to visit a certain clinician and witness what he was doing. You may well imagine how great my astonishment when I saw that this person was preparing a mesial cavity in an upper left central incisor, and prior to adjusting the rubber dam he had punched but one hole in it. Thus, when the dam was in position, the crown of the tooth on which he was operating was the only one exposed to view. The man was about fifty-five or sixty years old, and he was asked why he did not cut two holes in the dam, so that the crown of the other central would have been exposed also. He answered, "It always hurts people so to tie the ligatures and I hate to do it." (I noticed while he spoke that he had a piece of orange wood shaped like a wedge in his left hand and a lead mallet in his right hand). He placed the wedge between the centrals and used the mallet on its end with so much force that I went away with some sympathy for that poor, groaning patient. I could not help thinking, if he did not like to tie ligatures on account of the pain, why did he use wedges in such a barbarous manner?

I walked to the next chair where there was an operator at work on a mesio-occlusal cavity in an upper first molar. This good man had punched but two holes in the rubber dam he had adjusted. Thus with the dam in situ, the crowns of the first molar and second bicuspid were the only ones exposed to view. He did not have a clamp on the first molar and the difficulties that were his, when he attempted to prepare the cavity, were the source of considerable amusement. The dam was continually getting in his way; on three occasions the patient slipped it from the distal surface of the molar. The operator said he would not place a clamp on any tooth, as he did not believe in their use. After the dam had slipped from the molar the third time, somebody asked permission of the operator to tie it in such a manner that it would stay in place. The operator did not see how the young man did this and I do not believe he would ever have known had not his attention been called particularly to it.

The young man took a few strands of cotton and rolled them into a ball. Then he took a piece of thread about eighteen inches in length and in the middle of the thread made a loop. Into this loop he placed the ball of cotton and drew the thread tightly around it. The thread was now passed between the molars, the ball of cotton being on the lingual side of the tooth. He then gently but firmly exerted a little force on that portion of the thread that was between the molars and drew the cotton or part of it into the interdental space between the molars. With the cotton in that position the rubber dam was secured and the patient could not move it from its position as he had previously done.

After a few moments I went to the next chair where an operator was working on an occlusal cavity in a lower molar and my surprise was great when I found that he had punched but one hole in the rubber dam that he had adjusted and that the crown of that tooth was the only one that was exposed. Although I only watched this man work for a very short time I regret to say that I saw him catch the rubber dam with a bur that he was using, tearing so large a hole in it, that he was compelled to adjust another. There were a number of other similar cases that gave evidence of a lack of judgment on the part of some of the clinicians in not properly adjusting the rubber dam for their operations. It is not necessary to refer to these as sufficient has been said in calling attention to the three cases above named, to answer the purpose of this short paper. The clinician who was preparing the mesio occlusal cavity in the upper first molar had by far the greatest amount of trouble that I witnessed, and having in the past seen others have similar trials, I will merely give the method that I find advantageous in adjusting the rubber dam for these troublesome cases. Let us, for example, assume that a patient with a cavity of this kind sits in the chair. Now we are dealing with a mesio-occlusal cavity in an upper first molar. The patient has not lost any teeth on that side of his head. The tooth is ready to be operated on. Space between the molar and the bicuspid has been previously obtained. Examination reveals that there will be some trouble in adjusting the rubber dam, as the contact points between the bicuspids and the bicuspid and cuspid are large and a trifle irregular. As gold will be the material with which the cavity will be filled, it will be necessary to remove the

clamp during part of the process of finishing the filling. Before the rubber dam is obtained, I will place on my bracket two pieces of Irish linen thread (No. 25) eighteen inches long. Besides these the clamp forceps, No. 51 rubber dam clamp, some thread bands (No. 16 Faber), and a piece of pointed soap. In the middle of one of the pieces of thread I will securely tie a small ball of cotton. A piece of rubber dam about six inches square will then be obtained. At a point about three inches from one side by an inch and a half from the top, I will punch one hole. It will be the largest that the Ainsworth contains. The punch will be withdrawn and the punch plate changed to the second largest hole in the punch and that sized hole will be used for making the remaining openings in the dam. Three-sixteenths of an inch from the first hole punched I will punch the next hole and I will continue to punch holes until there are six in all, about three-sixteenths of an inch apart. The holes will then be soaped and the dam adjusted. The thread with the cotton attached will be placed around the molar. The cotton will be drawn part way into the disto-linguo-gingival space. It will not be forced in this space, but the thread will be drawn taut, so that there will be little likelihood of the dam slipping past it. A clamp will then be placed on the molar. Then the bicuspid will have a ligature placed around it. For an anchorage of the dam between the central incisors, a short piece of thread band will be used which will be left there until the operation is completed. Ligatures will not be placed around any teeth but the two mentioned and the saliva will not creep in. Some care, however, will be used and a rubber band will be passed between each of the teeth from the central incisor to the second bicuspid. This will be done merely as a precautionary measure to be certain that the dam is past the contact of the teeth. A piece of rubber band will not be left between each of these teeth, as it is not necessary. When the rubber dam has been adjusted by this method, the crowns of six teeth will be exposed to view. When the clamp has been placed on the molar, the dam is held so far out of the way as not to prove an obstruction at any phase of the operation. There will be abundance of light also, and it will not be interfered with as is the case when the crowns of but two teeth are exposed. I have been using this method for the past ten or fifteen years, and I cannot speak too highly of the many advantages in its favor.

Tying the thread around a small ball of cotton, as has been suggested, may not be anything new, nor do I wish it understood that it originated in this office. At this writing, I do not remember whether it has been advanced prior to this time or not. My use of it dates back a number of years and it came about in this way: I had been in the habit of making a series of knots on the thread and trusting to them to hold the rubber dam in place. I adjusted the rubber dam to an upper molar where I did not wish to use a clamp and found the knots on the thread were not large enough to prevent the dam from being forced from the tooth, so another ligature was taken and a ball of cotton attached thereto. This held the dam in position and no further trouble ensued.

I believe there are 90 per cent more ligatures used by dentists generally than are necessary. In the majority of cases where the rubber dam is so adjusted that the crowns of three or four teeth are exposed, if instead of tying ligatures around each tooth, a small ball of cotton or a piece of spunk is crowded into the interdental space, the ingress of moisture is prevented.

Much has been written in regard to the use and abuse of the rubber dam clamp. Very few words will cover what is necessary to say in relation to what others have said in condemnation of it. If by adjusting the rubber dam clamp on a tooth, the rubber dam will be held so far out of the way that anybody can thus expedite an operation, then I hold we are justified in its use. This, I feel, covers the whole field.

For the benefit of the majority of men, it might be well for somebody to write and illustrate an essay on this topic. In fact, I think it would be well if ten men were asked to write and illustrate an essay on "My Method of Adjusting the Rubber Dam." Much could be learned by careful comparison of the different ideas and the methods used.

Dental Hints.

BY DR. J. D. WHITEMAN, MERCER, PA.

TO MAKE A GOLD CROWN WITH PERFECT ARTICULATION IN DIFFICULT CASES.

FIT band in usual way, and after contouring, trim it down to make room for as deep a cavity as practicable, place a little ball of modelling compound in the band and have patient bite into it, remove band and compound intact, carve off superfluous compound and shape it up as you wish completed crown to be.

Now take a disk of platinum foil No. 60, and with the finger press it down over the compound, being careful to get a perfect adaptation. Invest in marble dust and plaster up to the top of band, cusp down; when set, trim investment down very little, as a very little indeed is required; warm it slightly, remove modelling compound, and flow solder in the cusps.

The platinum foil is easily removed in polishing. Although it is not often objectionable.

TO PREPARE ASBESTOS FOR PULP INSULATION.

Take a sheet of asbestos paper (that sold at depots as asbestos foil) and dip it into sandarac or balsam varnish, allow it to dry a day or so and redip it until the asbestos is glazed with balsam.

Punch from this paper, small disks of different sizes (a leather punch sold at hardware stores for about 50 cents is very convenient for that purpose.) These disks are a most effective and convenient pulp insulator. Keep a quantity at hand, and before using each disk, dip it again into thin varnish and place into position. Always cover disk with cement, as a cavity deep enough to require one should never be filled with metal alone. The pulp should always be dried and disinfected with carbolic acid.

"Dental Dot."

BY D. GENESE, BALTIMORE, MD.

CONTRARY to Dr. H. J. Gosle's advice, I use steel extensively in regulating cases. But always have it carefully protected before using that, no rust is visible. When formed to the desired shape, steep it in chloride of zinc, and then into pure molten tin. No oxidation takes place, and its luster is improved and it can be united to any other metal by pure tin. Using the chloride of zinc as a flux. While if imbedded into vulcanite it does not cause disintegration of the same, as a low standard gold will.

Practical Points.

BY W. M. MEGGINSON, D.D.S., TOLEDO, O.

TO TRUE CARBORUNDUM WHEELS.

WE have all noticed that our pet carborundum wheels are prone to get out of true. To true them up in two or three minutes' time, take the wheel, mount it on a mandrel, take engine to laboratory and run the untrue carborundum against the carborundum on the laboratory lathe. Run the wheels in opposite directions, holding hand-piece at an angle of about 45°. The result, to those who have never tried it, will be wonderful.

A WORD ABOUT USING THE DISK.

I want to enter a plea for "disks." In finishing a proximal contoured gold filling (or amalgam), it can be done almost entirely and very rapidly with specially thin disks. Just hold your finger against back of disk and you can give it a wiping motion so the contour will be made instead of cut off as in the use of thick stiff disks, running straight without wiping motion.

THE SEPARATOR AND TOOTH SEPARATION.

Why do dentists persist in using the ungodly mechanical separator? Now some of the brethren jump up and cry, "just think of forcing a metallic wedge between teeth at the necks

where enamel is thinnest and weakest, and fractures of same cannot be seen, you screw and drive until the poor patient literally writhes in pain." Pulpas have died with less provocation. Pericementitis has many times been a sequel I think of the unnecessary pain, together with danger of destroying the life of your otherwise good filling. In my opinion, a separator is a thing to be rarely used, and then with a great deal of caution and preferably one that can be gently used, and then separating only slightly. We may have a little more gold to show, or it may be a little more difficult to fill or cut away more good tooth substance, but in the end it pays, as you know, "honesty is the best policy when we are going to be found out." When teeth are so close as to need separating, as a rule, just cut away a little more tooth, and the space left after using a specially thin disk, or a strip, is only what will be right. Just think for a moment of mouths where all teeth are far apart, did you ever see much decay in those teeth?

One Way to Cut Gold Foil.

BY HENRY BARNES, M.D., CLEVELAND, O.

In preparing gold foil in the form of ribbons I have found the following an easy and effective method :

Take a sheet of writing, or other white paper, place one sheet of gold on this, then cover with another sheet of paper, and so on until you have as many sheets of gold as you wish to use. After placing the last sheet of paper over the foil, fold the whole over twice, as you would fold a letter, then with shears cut paper and all into strips of desired width. In this way the foil does not fold on itself for there is paper between each sheet. When cut, remove the strips of paper and the foil will be found to be cut true, with no torn edges, it has not come in contact with the hands, and is in the best possible condition for working.

One Hundred Cases of Filling Root-Canals, by the "Chemico-Metallic Method," without a Single Failure.

BY BENJ. W. SMITH, NEW YORK.

IN the February, 1898, number of the JOURNAL, there appeared an article over the signature of Dr. H. B. Hinman, Bucyrus, Ohio, entitled "Some failures attending the use of Weld's *Chemico-Metallic Method*," which, in view of my experience with the Method, prompts me to say a few words in reply.

In the first place, let me say that I was led to adopt the Method by reading Dr. Weld's definition of an "*ideal filling*" for root canals, viz: "*A smooth material, possessing requisite stiffness to reach the apical foramen, through disinfection and a practical sealing of the cavity.*"

In the second place, with the statement made by Dr. Weld, viz: that "No method for filling root-canals was ever devised or probably ever will be devised that will preclude the possibility of after trouble in some cases."

It may be said, therefore, that "some failures" alluded to by Dr. Hinman might be attributed to the percentage of failures which are doubtless associated with all other methods.

To my surprise, be it said, however, that after using the Method for a period of a little over eighteen months; I have not had one failure reported in over one hundred cases. It occurred to me that such extraordinary success might be due to a combination and succession of easy cases, and that perhaps other practitioners, like Dr. Hinman, had met with more failures. To confirm this impression I took the liberty to write a personal letter to a number of well known gentlemen in the profession, whom I learned had adopted the Method in their practice, to ascertain what their percentage of failures was. These letters were addressed to practitioners residing in Maine, New York, Pennsylvania, and Kentucky.

Dr. E. C. Bryant, of Pittsfield, Maine, says: "I have used the Method in my practice more or less since January, 1897, and so far as I know there has been but one failure."

Professor J. S. Cassidy, of Covington, Ky., a chemist as well as a practical dentist, writes: "After the first few months I

ceased keeping a record, but I think I can truthfully say that one per cent. would easily cover all failures. Moreover, I have used the process in cases where I would not dare to fill permanently in any other way."

Professor Wilbur F. Litch, editor of *The American System of Dentistry* and *The Dental Brief*, Philadelphia, Pa., says: "Dr. Weld's method I have used almost exclusively in connection with very minute canals of molars and bicuspid roots. I have not kept an accurate record, but do not recall any case of failure which could fairly be attributed to the "Chemico-Metallic Method" properly applied. I think, however, that a perfect fit of the canal with the metallic point is essential to permanent success."

Dr. Frederick H. Lee, of Auburn, New York, whose reputation as a careful and conscientious operator is second to none, writes as follows: "I have had wonderful success. When I first began to use the Method I used it for nearly every case and condition to test it, and kept a record of about 150 cases, but stopped that as I found the results were so uniform that it was not necessary to record them. So far, I think, about five cases have returned. I think where the roots are of free access that it is the best method yet discovered."

The above letters are only samples of a number which were received.

When one considers that a great majority of these cases were disinfected and filled at the first sitting, it must be acknowledged that the showing is a remarkable one.

Dr. Hinman, out of thirty lost three cases, or ten per cent. Two of Dr. Hinman's cases, however, were upper bicuspids, in which he says he thoroughly removed the pulp from the roots. In the first case the root was filled on July 10th. The patient returned in the middle of December, complaining of the tooth. On the 29th of February there was a "copious flow of rather thick pus from the lingual root-canal, as soon as the point was withdrawn."

Both of these cases were in the mouth of the same patient.

The pulp in these cases having been "thoroughly removed" and assuming the canals were disinfected, what caused the irritation which finally led up to inflammation and suppuration, excepting the presence of a blind abscess?

If a blind abscess did exist when the canals were filled, what known method could have possibly prevented the after trouble?

The conclusions which I would draw from the results of my investigation and inquiries are:

1. The *Chemico Metallic Method* is a *method of science*.

2. It accomplishes all the author claims for it.

It is a valuable acquisition to the dental profession.

An Interesting Case in Practice.*

BY J. F. DOUGHERTY, D.D.S., CANTON, OHIO.

A LADY patient, perhaps thirty years of age, called about a year ago, complaining of pain in the left side of the upper jaw. On examination I found a dead pulp in the canine, which had been filled for some years.

An opening was made on the lingual surface, and pulp removed. There was some discharge of serum and the patient was dismissed for two days, with instructions to close the canal with cotton before meals, to be removed immediately afterward. The trouble subsided at once, and being entirely comfortable, the patient saw no occasion of an early return for treatment. When she did return, however, about a month later, it was with a much swollen face. I removed the debris, for she had become careless about the use of cotton, and there was quite a discharge of pus. She was dismissed again with the same instructions as before. She returned in a few days and the usual treatment was given until the case was apparently ready for root filling, which we hoped to accomplish at the next sitting.

But she was unable to keep this appointment, and when I next saw her, after some weeks, it was with a badly disfigured countenance. The parts in the meantime had again become painful, and while in this condition, she was struck a severe blow on the cheek and nose by the head of her little child with whom she was playing. The parts swelled to such an extent as to completely close the left eye, and in a few days more a fistula had made its appearance well up on the nose. It was a decidedly

* Read before the Northern Ohio Dental Society, June, 1899.

angry looking affair and occasioned her considerable anxiety. Her friends took occasion to relate instances of malignant growths due to diseased teeth, which did not tend to soothe her nerves. She at once consulted her physician, who advised the immediate removal of the offending tooth. So it was with considerable difficulty that I allayed her fears and persuaded her that the tooth might yet be saved and the disfigurement removed. After some days of the usual treatment for alveolar abscess, supplemented by the use of resinol ointment over the fistulous opening, the parts appeared to heal perfectly and a trial filling was placed in the root. Everything was lovely for some days; when, on very short notice Messrs. Abscess, Fistula & Co. resumed operations at the old stand and hung out their sign in a most conspicuous place, in even more glaring colors than before. The case was now getting to be somewhat monotonous, and I realized that something more heroic must be done if I hoped to save the tooth. So I suggested to my patient that amputation of the apical portion of the root was the treatment indicated, and was preparing for the operation, when I was informed that some other means would have to be found of saving her tooth; that much as she valued the tooth, she would prefer its extraction to the operation. Nor could she be moved from this resolution. I did, however, after much persuasion, for my patient was very nervous, succeed in making an artificial fistula under the lip. This required going through three-fourths of an inch of tissue. As the tooth was of unusual length (one and three-eighths inches) and the deep penetration of which into the tissues, undoubtedly had much to do with determining external opening.

With perfect drainage established through the new sinus, the old one soon closed. And after waiting several days for the tract to become well filled in with new tissue, we were ready for the final operation. This consisted of filling the root, apical space, and artificial fistula, with the thickest chloro-percha that can be taken into the syringe, and sending it home with as much pressure as can be applied. I incorporated with the chloro percha quite a little iodoform.

The pain following an operation of this kind, which is sometimes considerable in some cases, can be very nicely controlled by the use of ammonal.

This is an unusual, but perhaps not altogether unheard of mode, of treating cases of this kind.

The Elliot Separator as a Matrix Clamp.

BY N. H. GROVE, D.D.S., WYOMING, OHIO.

TAKE thin copper or German silver (I use the copper from worn-out brushes, to be obtained at any electric light station. It is just the right thickness). Cut your matrix bands out of this. Punch a small hole in each end of band for points of the Elliot separator to catch in. Apply around tooth, screw up separator until matrix is tight. You now have a matrix firm and snug to pack the filling against.

National Dental Association.

HELD AT NIAGARA FALLS, AUG. 14, 1899.

(Reported for OHIO DENTAL JOURNAL by Mrs. J. M. Walker.)

(Continued from page 564.)

Cements.

BY DR. E. J. WEDELSTAEDT, ST. PAUL, MINN.

THE cements having been in use for the last thirty years, it seems strange that it has not been recognized that the majority of those in use are very readily penetrated by moisture. If each one, the next time he uses cement, will mix a little more than is needed, and place the residue in a bottle of ink for from 24 to 48 hours, he can easily ascertain the extent of penetration. If he finds *one* that is not penetrated, that is the one to stick to. Where ink can penetrate, saliva can penetrate also, and where saliva can penetrate, micro-organisms can go.

Dr. Wedelstaedt then produced a number of glass tubes containing aniline solutions, in which, on the 12th of July, there had been placed mixes of different cements, those in one tube having been covered with sandarac varnish; in another with hot melted paraffin, the third having had no preparation.

Dr. C. N. Johnson was requested to open the tubes and report the condition of the cement masses with the result that the cements tested were pronounced by Dr. Johnson not to be fit

for use in the teeth, all of the cylinders showing more or less penetration and discoloration by the analine solution.

Dr. Wedelstaedt said that other experiments had shown that there was also both expansion and contraction to be overcome in the different cements on the market, one expanding 2 m. beyond the cavity; another contracting to the extent of a line running completely around the filling. Microscopic examination of the different powders also revealed bits of wood, cotton, hair, etc.

Age has a remarkable effect upon the resisting power of the cements as tested by the dynamometer. In one case a cement which carried but 30 or 35 lbs. at the end of 24 hours carried 400 lbs. after 96 hours. He concluded his paper by saying that when we demand cements that will neither shrink nor expand, and that moisture will not penetrate, we will get them, and it will be the better for our patients the sooner it is done.

Some Phases of the Cement Question.

BY DR. W. V. B. AMES, CHICAGO.

In the consideration of the physical properties of filling materials, the cements should have a share of attention. Among the questions to be dealt with are the crystallization of cement liquids; shrinkage and expansion; the coarse or fine powders; arsenical contamination of cement powders, etc., the crystals which separate from the fluid, whether held in suspension, or adhering to the sides of the bottle, or settling to the bottom in a mass, were originally part of the solution, evenly distributed throughout, so that their separation and loss must impair the virtues of the original formula. The crystals may, however, usually be liquefied by heat and restored to the fluid, or they may be rubbed down and liquefied in the mix of the cement.

Dynamometer tests show an increase of edge strength up to a point somewhat short of impalpability in the powder, we may expect greater strength of contour when a slight grit is desirable, though the granular state may detract from the ability of the mass to withstand long-continued attrition.

As to shrinkage and expansion, when the phosphoric acid has been modified by alkaline phosphates only, the basic phosphate which is formed is of a friable nature and exerts no special force in drawing together the granules, making evident shrinkage

at the periphery. But when the acid has been modified by non-alkaline phosphates the basic phosphate formed agglutinates the zinc oxide granules, drawing them towards a center and giving a tendency to a diminution of volume during crystallization, dependent upon lack of water of crystallization. This, if present, would give too rapid setting, but which if added to the crystallizing mass will be taken up and given the difference between shrinkage and expansion.

When the mass is allowed to harden in a tube in the dry state—wholly unlike conditions exist to those present when the cement is used in the mouth. There is a disadvantage rather than otherwise, in long continued protection from the saliva, in the use of the cements in which the phosphoric acid is modified by non-alkaline phosphates.

Arsenical contamination of the cement powders is easily demonstrated, but the zinc-arsenic compound is inert and wholly devoid of poisonous properties *per se*, and may be wholly ignored.

In the discussion of the subject Dr. G. V. Black said that it is greatly to be desired that the physical properties of the cements should be investigated as it has not yet been shown that we have a reliable cement to-day; one that will do what cement fillings are expected to do. Unless each batch is tested we do not know whether it is going to shrink or to expand. From observations made in his own laboratory, he has found that in a well-prepared cavity there was sufficient shrinkage in an hour or so to let arsenic out on to the gums if it had been used as covering for an arsenical application.

Dr. J. D. Patterson said he did not see how it could be possible for Dr. Wedelstaedt to make a proper mix in such large masses.

Dr. Wedelstaedt replied that each of the "fillings" represented the entire mass and the mixing was thoroughly done.

Dr. Crouse hoped more men would take up this work so that we would eventually have a cement that would not shrink, that would not be porous and from under which arsenic could not escape.

Dr. Ames said that from his own experiments in this direction he had reason to believe that the tendency to shrinkage would yet be overcome and that we would eventually have a cement that will be impervious to moisture.

Susceptibility and Immunity to Dental Caries.

BY DR. G. V. BLACK, CHICAGO.

Caries is, and has been, so common that it has come to be considered that practically, all teeth are afflicted. And yet there are a sufficient number of exceptions, for all who have been long in practice have known some persons who have been wholly immune during a long life time. This has been erroneously attributed to a superior quality of the teeth, but caries is not dependent upon the teeth, which are all nearly the same in their calcification, though in their physical structure there are wide differences. Developmental grooves may be imperfectly closed having fissures, pits and openings; the dentine may have interglobular spaces, but these and other physical imperfections are not *causes* of decay; they only give opportunity for the action of the causes when the cause is present and active. In caries the teeth are acted upon; the agents acting to produce decay are outside of the teeth, and must be found in their environment. Caries has its beginnings only when the conditions of the oral secretions are such that the tissue organisms causing decay form gelatinous plaques, by which they are glued to the surface of the teeth. So long as they have no protection from the dissipation of the acids they form, they cannot produce caries. The organisms grow in every mouth, but the formation of the gelatinous plaque does not occur in every mouth, and this seems to depend upon something in the saliva, the nature of which is yet unknown. Researches for the factors which predispose to decay should be sought, therefore, not in the teeth themselves, which are the most unchanging of the tissues of the body, but in the surroundings of the teeth; in the oral fluids, and in the bodily conditions which give character to the secretions; the latter being affected by the slightest causes.

Susceptibility to caries of the teeth is influenced by heredity, by age, and by fluctuations of bodily conditions. The hereditary predisposition to caries is of first importance, as in children living under conditions similar to those of the parents in their childhood, the susceptibility to caries will be very similar in the majority of cases. The hereditary predisposition disappears with the coming of adult age. The effect of early radical treatment

by filling is that the person becomes immune at the time of life at which caries would be making its worst ravages if early filling had not been done. This is partly due to better care, the better care being due to the better conditions which made the better care possible. Full and natural use of the teeth in the mastication of food, and the abrasive action of the food in cleansing the teeth is an important element in bringing about an early abatement of susceptibility to caries. Through reaction a better condition of the secretions is produced. For children, therefore, the most perfect operations are demanded, in order to maintain the full, free and efficient use of the teeth. The practice of making permanent fillings for children has been severely criticized, but there are no good grounds for this condemnation. The fact that the pulp occupies larger space than in adult teeth, simply demands corresponding care and judgment. Judicious management is required, and the endurance of a child should never be severely taxed; the nervous system should be looked to with the greatest care. When permanent operations cannot be made the case must be tided along until better conditions obtain.

Local immunity is due, not to differences in the structure of the teeth but to environment, certain localities favoring the protection of microbic plaques. Without careful consideration of these questions clinical experience will lead to conclusions very wide from the facts.

Management of Children's Teeth.

BY DR. C. N. JOHNSON, CHICAGO.

In the management of the deciduous teeth, palliative work, keeping the patient comfortable for a few years, is usually the object. With the permanent teeth—those which appear early in life—the aim should be to give the greatest permanency to the operations, with the thought ever in mind that the highest possibilities in dental art involves saving these organs for a life time.

The assumption that the deciduous teeth may be neglected, however, because they will eventually be lost, should be combated at every opportunity. This not only because of the possible suffering, and the injury to health resulting from lack of mastication, and from the presence of diseased and abscessed teeth, but especially is the question of acquired habits which may conduce

to permanent injury. The habit of bolting the food unmasticated, and therefore unfit for service, is one that often clings through life. Effective mastication is a weighty factor in the health and longevity of the individual, and it is all important that the teeth of children shall be kept in such condition as shall conduce to habits of thorough mastication. If a pulp is exposed in a deciduous tooth, syringe well with tepid water, and remove anything causing pressure on the pulp; then apply oil of cloves on a pledget of cotton the size of a pinhead and cover with dry cotton. Fill over this. Oxide of zinc and oil of cloves makes an anodyne and antiseptic paste which may be flowed over an exposed pulp and protected by a filling of gutta-percha or cement. The pulp will probably die easily under this, and after a week or two the canals can usually be cleansed and filled. If abscessed they should be cleansed mechanically and packed with cotton saturated with oil of cloves, which, by means of pressure with unvulcanized rubber placed in the cavity, should be forced out through the fistulous opening. The pulp chamber may then be flooded with a solution of gutta-percha in eucalyptol and some temporary stopping forced into each canal until the eucalyptol shows at the opening of the fistula. They will rarely give further trouble.

The first permanent molars are called upon to do longer service than any other teeth in the mouth, and have a very important function during the growth of the bicuspid and second molars to full length. If not kept in place the jaws are allowed to drop together so that the upper incisors overlap the lower more than normal and the bicuspid and molars never acquire their full length. Every effort should, therefore, be made to preserve the first molars. On the slightest approach of caries they should be carefully filled. If they apply late, build them up, or crown them if necessary. The material to be used must be governed by the ability of the patient, or the disposition to withstand dental operations.

It is well to use cement on the occlusal surface as a prevention, forcing it into the grooves and sulci, renewing it until conditions make it possible to insert metal fillings—"conditions" here referring to expediency and forbearance on the part of the patient, rather than to any pronounced change in structure. The choice between gold and amalgam depends upon the question of expense and the ability of the patient to submit to gold opera-

tions. It is a question of physical and mental stamina on the part of the patient. The mesial surface of the first molar calls for the most careful attention as it is in contact with the deciduous molar, and if the latter is affected on the distal surface the former is almost certain to suffer. It is well in many cases to grind away the distal surface of the deciduous molar. If decay occurs control it with gutta percha or cement until the deciduous molar is lost when the permanent molar should be promptly and permanently filled with gold while it is fully exposed. If decay occurs early in the permanent incisors it should be controlled with gutta-percha or cement until the patient is schooled into an attitude of sufficient forbearance to submit to gold operations, as early as may be practicable.

DISCUSSION.

Dr. S. B. Palmer said: As the mineral becomes the vegetable and the vegetable becomes the animal through the action of vital energy, rising a step higher—from mineral to mind there is no break. Through it all there is a vital principle that cannot be weighed; cannot be measured. A tooth is developed which corresponds with another on the opposite side of the mouth in size and form and color, that is divine, and so it is with all the other organs. The tooth is sustained by vital energy; when it becomes inert it is cast out. Taste is vital electricity. When silver is worn in the mouth, coming into contact with food, the current is converted into organized electricity and gives an unpleasant taste. Metal in the dentin which comes in contact with the pulp also creates a current which is connected with galvanized electricity. Food produces a vital current and electricity carries on the work.

Dr. Corydon Palmer said the older men present had all been familiar with the use of tin and gold. He had used it himself as far back as 1839. If it was good then, it is good now. It is better than anything except pure gold, and for many cases it is even better than gold. With teeth of good structure, and with all other conditions favorable, gold was undoubtedly the best material, but there are cases which require cement, and gutta-percha is best for others. There is no subject of greater interest than the management of children's teeth. Begin early with the little children; watch them carefully while they are changing

their teeth and getting the sixth year molars. If there is a little decay fill them promptly—fill them and ram them. Do not use tin and gold simply because it is easy to use it in that way, and you can do it quickly and make a nice job; do not use cement or amalgam because you can let the patient go quickly and make room for another; but do what is best for the tooth in each case. But do not subject the little ones to too severe operations. There is nothing better than tin cut in strips and folded over to the right width and made into cylinders.

Dr. B. Holly Smith: The conservative spirit of Dr. Johnson's paper appeals forcibly to me. The day has come when old-fashioned dentistry has to go. Children will cease to come to us crying and afraid; they will no longer approach us with dread. The youngsters will come to us willingly and gladly. I congratulate the modern conservative dental operator on the new attitude of the public mind towards dentistry. It has been said that the dental profession is increasing out of proportion to the population. But with dental practice as humane and conservative as that advocated by Dr. Johnson, there will be fifty per cent. more done. People will no longer stay away from the dental office because of wrong impressions and dread of dental operations.

Dr. Garrett Newkirk: It is often quite difficult to keep the teeth of little children dry: you cannot always use the rubber-dam or clamps. I have often found it advantageous to make the little patient my assistant. Give them a hand-glass and adjust an absorbent pad or a piece of spunk in place, and show them how to hold it between the cheek and the tooth. They will often be so greatly interested in being of assistance in this way as to forget their discomfort.

Dr. Darby: I rise not to criticise but to commend, and also to put in an interrogation mark. Ought arsenic ever to be used in deciduous teeth? It has been spoken against most positively. If I had been asked the question ten or fifteen years ago I should have said it would be positively reprehensible; that it would be bad practice; that creosote and cantharides were all that were required.

But my views on this question have changed. I know of no reason why it should not be used with proper precautions, and in the last ten years I have so used it in very minute quantity, and I have yet to see the first indication of bad results.

Another point, and that is as to the use of gold in the permanent teeth of young children. Just as soon as it is desirable, or the patient is prepared to stand the wear and tear of the gold operation it is said to be the better practice that we should make permanent operations as early as possible. But the pulp must always be taken into consideration, and the dangers from thermal changes.

It is better to hold them along with cement and gutta percha. Not until, I do not dare to say in the presence of Dr. Black until the teeth have attained a greater degree of hardness, but until the teeth have matured. I must give some credit to the results of experience and observation, though I am less ready now than formerly to put theory against observation. I know that Dr. Black's science is worth more than my observation. Formerly I would have said that great changes do take place in the structure of the teeth—changes from good to bad, or from bad to good. At the age of twelve I should have said this was my position; at the age of thirty-five or forty, less certain. But I am afraid to put my observation against the scientific knowledge of such men as Dr. Black and Dr. Williams. But I must disagree as to the use of gold in young teeth.

Dr. McKellops: I must take exception to some points in this paper. Young teeth can be filled with gold, but I have urged ever since the cements came in that by the use of oxy phosphate we can keep the teeth along with the age when we can operate as we desire to do. But even then a foundation of cement at the bottom will save two-thirds of the work. There will be no decay under it, and you can put what you please on top of it. Pay attention to these little things and you will get fine results and save much suffering. For old people who cannot stand much you can save the teeth for years and years, when they cannot stand the insertion of other materials. I know of one lady who will have nothing but cement in her mouth. She travels a great deal, goes everywhere, and has no trouble with her teeth.

If it wears out it can be replaced with but little trouble. I am not ashamed to have anyone look at my work of this character. Try it and see what you can accomplish with it. If you will use amalgam put cement under it and keep the mercury away from the dentin. It will create no soreness and it never leaks.

Dr. A. W. Harlan : I am astonished at the position taken by one of the essayists on the penetrability of cement, as shown by cylinders placed in bottles, which were all permeated with the dye. He said that no cement was sold to dentists that would not either expand or contract ; that cement was not a reliable filling material. And yet this evening Dr. McKellops, an old practitioner, and Dr. Darby, a professor of operative dentistry, say that the cements will and do preserve the teeth. So that laboratory experiments and practical experience do not go hand in hand. What are we to do? Shall we go on using the cements, or shall we abandon them? If the experiments are to be relied upon, it is not safe to use them in the teeth, because they leak. But the conditions in the laboratory experiments are not those which exist in the mouth. Some manipulators, too, are so skillful that they always mix their cements so that they do not either shrink or expand, though it is also true that there are many who cannot so mix them.

Dr. Darby says he uses arsenic for destroying pulps in deciduous teeth. But even his experience in this direction is not a safe guide ; the danger is too great in consequence of the uncertainty of retaining the application, especially in the presence of the fact that all known cements leak. A well-known writer in the *Cosmos* has recently advocated the use of arsenic for sensitive dentine, but I apprehend that sooner or later he will find those teeth pulpless if not abscessed. The presence of arsenic is fatal to the vitality of the pulp.

The non-appearance of the bicuspid is sometimes due to the use of arsenic in deciduous molars, the escape of arsenic destroying the germ of the permanent tooth. This does not follow in all cases, but undoubtedly has in more than one that arsenic has produced necrosis. It is not safe for the vast majority of practitioners to use such a corrosive agent to destroy the pulp of a deciduous tooth. There are other means of effecting this without the risk of injury to the germ of the permanent tooth. We are often restricted in our methods by the lack of physical strength or mental stamina in children. When we are not able, for this reason, to do the thorough work we would like to do, it is better to sterilize the pulp chamber and leave the root-canals open, even resorting to the old-fashioned plan of drilling into the pulp chamber beneath the gum rather than attempt ineffectual root filling.

Dr. Sitherwood: There is nothing in the whole range of practice that gives more trouble than the root canals of deciduous teeth, but for the past year I have filled a large number practically as Dr. Johnson has described. I am in accord with Dr. Johnson as to the use of cement, but the manipulation in mixing and also the temperature, has a great deal to do with success or failure. I have been gratified with what Dr. Black has said relative to immunity in the deciduous teeth. We often find that decay has progressed to a certain extent and then has ceased. We find the cavity has taken on a brown color and decays no further. As to the use of nitrate of silver, I have found that the citrate of silver is much better; there is nothing so useful in the deciduous teeth.

Dr. Geo. Vann: A number of years ago Dr. G. A. Bonwill demonstrated in the city of Atlanta, his method of using gutta-percha in approximal cavities in children's teeth, not merely to preserve the teeth, but to preserve the space in the jaw, inducing development of the jaw for the accommodation of the permanent teeth. I had some conversation with Dr. Bonwill on the subject, and on my return home began that practice and the results have been most satisfactory. Dry out the cavities and apply a solution of balsam cut in chloroform, and then the gutta-percha. It is done very quickly and is easy to the little patient, and space is insured for the advent of the permanent teeth.

Dr. Ames: I would like to correct the impression that there is a discrepancy between the results with cement in the teeth and in the laboratory. No claim has been made that every cement will shrink or leak in the mouth. It is only in the dry condition from lack of water of crystallization. In the mouth, in contact with dentine, shrinkage is overcome, because it is kept moist at all times. There are different degrees of porosity in the cements, but I think it is possible to make a cement that will not be porous. Dr. Johnson presses the cement in hard with the finger. Dr. Pearsall advocates the use of a tin matrix that can be pressed against the cement, and makes a beautiful surface. I would like someone to try chloride of gold crystals, slightly liquified and applied to the surface of a cavity, as nitrate of silver is used.

Dr. Wm. Conrad: By the applause that greeted words spoken in favor of amalgam, one would judge that this society was becoming a body of amalgam-stuffers. Many are going back

to sponge gold. I am sorry to see such applause given to amalgam, for it has done more harm to the dental profession than all other causes put together. A low grade of dental practice makes a market for amalgam. I have used arsenic for twenty years and never had but one serious case. Then I stuffed arsenic into the roots of a tooth, and lost the tooth as I deserved to do. But in twenty-two years I have had only that one lame tooth.

Dr. G. V. Black: I have limited the easy filling of children's teeth as closely as it should be limited. We must not destroy the confidence of the child, nor break down its courage, nor injure the nervous system. But to do our whole duty, we should fill permanently at the earliest possible moment, and there will not be so much to do in later life. I detest the idea of temporizing, and yet in many cases we are obliged to temporize. We should not put in a big gold filling independent of conditions, but we can endeavor to bring about the conditions that will permit the insertion of the gold filling. I have put in many for children eight years old, and I have not found that the pulps died in consequence. Pulpas do not die under gold fillings in children's teeth in as great proportion as in the teeth of adults. As to the conditions of immunity, there is a whole lot we don't know yet, but we should begin to study the question earnestly and endeavor to elucidate it. It will require much time, and much thought, but by putting together a suggestion from one man, and a thought from another, we shall eventually reach something positive and definite. The fact is admitted that conditions of immunity are confronting us continually. It is only those who have something the matter with their teeth that come to us. Many go through life without decay; with nothing wrong; consequently they do not come to us—such are to be found in every community. Let us seek out such cases, and examine and study them. Many have diseases of the periodontal membrane who have no decay. Others attain a condition of immunity after violent ravages of decay. I wish the dental profession would take up the study of the condition of immunity. It is not a subject for laboratory study and investigation. In this line clinical study must precede laboratory study. Take it home with you as a subject of thought and report your findings.

ALL SORTS

Home-Made Logan Crown.

At a meeting of the Manchester Odontological Society, in February last, Mr. Sherratt, L. D. S. Eng., demonstrated the making of a Logan crown. The root of an upper central was prepared in the usual manner, and was ground close to the gum. The post used was of platinum and iridium (made by the Dental Engineering Company), and was tapering in shape and of sufficient length to extend well beyond the root. The root having been so prepared as to receive the post tightly, a portion of soft platinum foil is burnished over the root, and the post being pushed through it, the two are withdrawn from the root and soldered with pure gold. A mineral tooth having been selected and prepared to replace the missing central, the post and tooth are fitted to occupy their relative positions. The pins of the mineral tooth being made to tightly grasp the projecting portion of the post, to which it is now to be securely soldered with pure gold. This having been accomplished, the lingual surface is built up with Ash's mineral body, and fused in the furnace. The tooth being completed was cemented to the root in the usual manner.—*The Dentist.*

A Tooth in the Nasal Cavity.

I have here a tooth which I extracted from the right nasal cavity of Mrs. L. G. H., on April 3, of last year.

I will pass it around that those who so desire may see it. You will observe that it has been ground down to show the internal structure.

The patient was thirty years old, and married. She sought treatment for catarrh and throat trouble and stated that she had been treated by several homeopathic specialists at intervals for several years. But having her nose sprayed, and taking medicine out of two glasses had given but little relief.

She had chronic rhinitis with a stinking discharge from the right nostril, chronic pharyngitis and was anaemic and in rather poor general health. On cleansing the nasal cavity I discovered what I mistook for a foreign body, about one inch from the anterior nasal orifice. I was surprised to find that I could make little or no impression upon it with forceps, or strong steel hooks, although considerable force was employed. Both ends being imbedded I determined to cut it in two by means of the

dental drill, and extract the fragments. The jarring of the drill loosened it somewhat, and then with the steel hooks it was extracted.

It grew from the nasal septum, in which it was imbedded to the depth of three-sixteenths of an inch, with the root turned downward. The root did not penetrate the roof of the mouth, it was not connected with the alveolar border, nor with any cyst. The tooth extended horizontally directly across the nasal cavity resting upon the floor of the latter and with its crown or point imbedded in the inferior turbinated bone. It resembles a canine tooth, is nine-sixteenths of an inch in length, a little over one-eighth of an inch in diameter in the largest part, had a pulp cavity and central canal and was supplied with blood vessels and a nerve. The patient had had the usual number of teeth in her jaws and there was nothing peculiar about her mouth.

The wound in the nose healed readily and she recovered from the rhinitis and pharyngitis with ordinary treatment.

Most of the works on surgery, and special treatises, speak of supernumary and misplaced teeth sometimes forming cysts in the superior maxillary bone and occasionally penetrating the nasal cavities, but in the literature accessible to me I have been unable to find any account of a tooth growing from the nasal septum, and I do not recollect having read a report of such an instance in the medical journals, although I have no doubt there are several such instances recorded.—H. TYLER, in *Southern Colo. Practitioner*.

A Method of Painlessly Removing the Dental Pulp.

I place a rubber dam over the tooth I want to work upon and protect the mouth or lips a little with some pieces of bibulous paper or a napkin, then throw a spray of chlorid of ethyl upon that tooth, increasing the evaporation of the chlorid of ethyl with an air-blast, and in less than half a minute it will obtund that pulp so that you can drill right down into it without the patient's knowing anything about it. The impact of the cold spray against the tooth will cause a momentary shock, but it will not last as long as that produced by the application of cold water, for the cold is so intense, especially when the evaporation is hastened by the air-blast, and in anywhere from ten to fifteen seconds it has become perfectly quiet. You can keep up the blast then for about a minute, when you can drill directly into the body of the pulp.

Then you can fill that cavity, on top of the pulp, with cocain crystals ground to an impalpable powder; with a pledget of cotton force them tightly up into the body of the pulp, putting them there with considerable pressure, leaving it there perhaps a minute or two or three

minutes, if you please ; remove it and run your broach clear to the apex—the patient never responds and knows nothing of what you are doing—and extract the pulp.

That is a very simple matter, and one that is always painless in the anterior mouth. In operating upon teeth in the posterior mouth, you have your limitations. You cannot obtund the tooth quite as well, because you cannot get your spray directly upon it. The larger the crown is, you have to obtund very much deeper. Sometimes there is pain and sometimes you find a great deal of difficulty in getting your broach clear to the apex. You may have to make several applications, but, with patience and care, you can even accomplish it in the posterior part of the mouth..

The reason I use cocain that has been pulverized is because the crystals are so much more insoluble, and it will take a greater length of time and you have a great deal more difficulty in forcing them in place. The tooth being numbed down by the cold, great pressure can be brought upon the cocain, driving it into the body of the pulp, so there is practically no excuse for producing pain in the six or eight anterior teeth, and generally not in the first permanent molar. Sometimes you may have difficulty in the case of a bicuspid ; if the cavity is in the posterior portion and the patient has a small mouth, it is difficult to get at.—Dr. HUNGERFORD, in *Western Dental Journal*.

Shall Bridge-Work be Made with Self-Cleaning Spaces ?

There is divided opinion among those who insert bridge-work, whether it is best to use veneers as dummies with self-cleaning spaces, or whether to use teeth of the regular thickness as dummies, and let these press slightly into the gum. This, however, must be decided by the case as it is presented. If the gum *be full* the latter can be used ; but if there be much absorption, then veneers are indicated. This division of opinion is brought about by the fancied odor of the breath, which is thought to emanate from persons wearing this style of work. Those in favor of the dummies pressing into the gum tissue contend that particles of food, putrifying, are excluded from lodgment in bridges with such dummies, which are not entirely excluded in bridges constructed with self-cleaning spaces. To refute this argument we have only to call attention to any piece of plate-work where the patient using the greatest care and cleanliness finds it impossible to remove the small particles of food which find lodgment under the teeth soldered to the plate, however careful the workman may have been to grind the teeth to fit accurately against the plate.

We were once disposed to believe that offensive breath *was* due to the wearing of bridge-work, but have learned that it is not attributable to this cause.

Thus we have known dentists who only had their own teeth, and wore no artificial teeth at all, and yet their breath was fearful.

We know others who only wear a small gold plate—no bridge-work at all—whose breath was insufferable.

We knew an old lady without a tooth in her head whose breath was so offensive that it was a penance to converse with her.

Again we know a dentist who before he wore bridge-work his breath was like an infant's, while after he resorted to bridge-work one could scarcely speak to him.

On the other hand, we know a lady who wore quite a large bridge, from whose mouth not a suspicion of odor could be detected.

So that when we consider these cases, we must attribute the odor as coming from other sources than from bridge-work.—T. F. CHUPEIN, *Dental Office and Lab.*

An Unpleasant Experience with Cocain.

A few weeks ago I had a very unpleasant experience with cocain, particulars of which may prove useful.

I was fitting gold collars for crowns to left mandibular canine and bicuspid, first trying each one to place separately, and using some little pressure to slightly cut the surrounding gum. I applied to the neck of each of the three roots, on a pellet of wool, one minim of 5 per cent. solution of cocain. I am particular in saying one minim to each, for the small glass container in which I place my solution, which is freshly prepared for each case, holds ten minims, and I roll up and place in the cup, at starting, ten wool pellets or rolls; these absorb all the fluid.

Placing a roll of absorbent wool between the tongue and alveolus to absorb any solution that might run down with the saliva, I waited about two minutes, changing the position of the pellets occasionally. I then removed the wool and tried the collar upon the first bicuspid. Finding the gum still sensitive, I applied a fresh pellet of wool to that root, leaving the others in their place. In about another minute or so I tried the collar upon the posterior root, and finding the gum insensitive, pressed the collar down to place and burnished it close; then, removing the remaining pellets of wool, also the one under the tongue, which was now in my way, I commenced to fit another collar. It had just got down to place without pain, when the patient remarked that her tongue and throat felt queer, as though they had no feeling, and she did not know

whether she was swallowing or not ; also that her hands were very cold ; I felt them and they were death-like. I then noticed that she had turned a most ghastly hue, and had dropped down helplessly in the chair, the pulse was scarcely perceptible, but hard and rapid ; her breathing quick and short, and appearing to come from the throat, not from the chest at all. Removing her to the couch, we laid her full length, but there she was worse and struggled to sit up, as she could not breathe while extended. She breathed rather better when she sat upright propped with pillows.

Opening the case containing nitrite of amyl capsules I found four all broken, someone evidently had been trying them to find out what they contained, I therefore gave the patient a teaspoonful of sal volatile, following that with a cup of hot strong coffee, and later with hot brandy and water.

She appeared to be in a state of collapse, hands, body and feet cold; face blanched and grey, with peculiar bluey green color ; shivering and shaking constantly. We drew the couch up to the fire, wrapped her in blankets, rubbed her hands and limbs, applied hot water, and gradually, though not for several hours, she rallied, and her breathing improved. Then her color became better, and later the pulse, and at the expiration of four hours she was able to go home in a conveyance.

After she left I examined all the appliances, and found six unused pellets, so at the most, she could only have had four minims of five per cent. cocain solution applied to her gums on wool ; that means, perhaps, $\frac{1}{3}$ gr., allowing for what remained in the wool unabsorbed.—*Journal of British Dental Association.*

How Would I Restore a Tooth a Little Too Far Gone to Fill, and the Loss of Structure Does Not Necessitate a Crown ?

I designate this as an open face crown, but it is hardly that, for as shell crowns are usually made, as little gold and as much cement as possible is used, while in this case, as much gold as is necessary to make contour, and as little cement as possible is used. It is hardly an inlay, either, although the inlay principle is used in making it. I proceed as follows :

First trim away all enamel which is frail, but leave much more of the labial plate than would be admissable for a foil filling. With disks, remove all the enamel from the proximal portion of the cervix on both sides, giving a flat, highly polished surface. Remove a portion, at least, of enamel from lingual aspect. Shorten tooth a very little, beveling from both sides. Cut out decay, and if this leaves the cavities so deep

or irregular that impression can not be taken, fill the deep parts with gutta-percha. The work can all be nicely done in the mouth, but I find that time is saved and the patient relieved, by taking a plaster impression and making a fusible metal cast. A perfect reproduction of the tooth in metal can be quickly obtained by slipping into the proximal space on either side, a piece of cardboard just thick enough to fit, letting it press the gum back a little from the interproximal space.

If I wish a pin or dowel to extend into the pulp canal or deep portion of cavity for anchorage, a piece of round wood toothpick is put in place, and comes away with cardboard in impression. When the impression is filled with Mellotte's metal, I have a more or less perfect model, to which my gold is approximately fitted.

Take a generous piece of 24 k. gold, 32 to 36 gauge, and by pressing, burnishing, and trimming over all the lingual and proximal surfaces of tooth, the gold on the proximal sides cut off just even with cutting edge, that covering the lingual side extending so as to fold over and fit to the shortened occlusal surface.

My way is to first fit to one proximal surface, forcing gold into more depressed portion, with a piece of erasing rubber under instrument. Slip from model and flow enough 22 k. solder to stiffen it. Replace on model, drive piece of soft wood between adjoining tooth and gold that I have melted on, thus holding firmly in place while I burnish and fit to the whole lingual surface; remove and flow on gold. Replace, fasten in place, and fit gold to other cavity and proximal surface. The gold being thin and pure, all this can be quickly done.

The solder is to be laid on in small pieces, a little at a time, and heat enough given to barely melt it, for until it is fitted to tooth in mouth, no solder is to be allowed to flow onto the part that is to be fitted over end of tooth and edges of labial plate of enamel. This is important, for upon the close adaptation of gold to tooth at exposed point depends the good appearance of the finished work, and, in a great measure, its durability as well. I have an idea the best way to add piece by piece of solder is by the use of the mouth blowpipe. Possibly that is because I enjoy the use of that instrument, and have become somewhat of an expert from having done all my crown and bridge work in that way. Others may get as good results from a mechanical blowpipe and bellows, but I have no use for them, except to melt a large batch of gold.

Our piece of work is now fitted to the model and made rigid enough to handle without fear of bending. We remove from model to tooth in the mouth and burnish to enamel. Remove very carefully, paint the inside with whiting or finely ground asbestos and invest; sufficient gold is then added to make necessary contour. You are all workers in gold

and have your own way of doing this, so I need not dwell upon it. A perfect polish out of the mouth is to be given to all parts except the labial face; a rough polish will do there, as this part is to receive its final polish in the mouth after cement has hardened.—H. T. KING, in *Dental Review*.

Conditions Caused by Pulp Nodules.

I wish to cite a few cases that have come under my observation which show a variety of conditions caused by pulp nodules.

Case I. Mr. H., about forty years of age. Inferior right first molar with a mesio-occlusal cavity. The tooth had given no pain, but he complained of neuralgic pains in the ear and temporal regions. The dentin was slightly sensitive when excavated, and the pulp responded but faintly to thermal changes. I made a small exposure, then applied cocain and arsenic to the pulp. This remained in the cavity for twenty-four hours, causing intense pain. At the expiration of this time I syringed the cavity with warm water, then made another application with arsenic and cocain, leaving it sealed in the cavity for one week. The pain subsided at the end of forty-eight hours, but the pulp was still sensitive at the end of one week. I increased the diameter of the exposure as large as the patient would permit and made an application of arsenic. It required four weeks' treatment to destroy the vitality sufficiently to remove the pulp nodule. After removing the nodule I found the pulp in the canals very sensitive, but the vitality was destroyed by one application of arsenic. The neuralgic pains ceased immediately after the pulp was removed and the canals filled.

Case II. Mrs. K., aged about thirty-five, had been complaining of toothache for three weeks in the superior right lateral. There was a large gold filling on the distal surface. No symptoms of neuralgia were present at any time. The filling was removed and the pulp exposed. The pulp responded readily to thermal changes and was very sensitive when pricked with an explorer. I made an application of arsenic and cocain, leaving it sealed in the cavity for forty-eight hours. She complained that the pain was excruciating at times. After a paroxysm of pain the tooth would remain comfortable for a few hours. At the second sitting I increased the diameter of the exposure and made an application of arsenic. I repeated these applications for three weeks at intervals from forty-eight to seventy-two hours. The tooth was not free from pain longer than six hours at any one time. At the end of three weeks I removed a large nodule from the pulp chamber. The pulp canal seemed to be entirely calcified. I found this calcification to extend through the

gingival one-third, the remaining two-thirds of the canal contained sensitive pulp tissue which required an application of arsenic to destroy its vitality.

Case III. Mr. C., a student of the Indiana Dental College. The superior right first molar with large amalgam fillings on mesio-occlusal and disto-occlusal surfaces. The fillings had been in the tooth for five years. I advised him to have them removed because of the condition of the margins. Decay extended under the filling so that some excavating was necessary. The tooth was not sensitive to the excavating, nor did the pulp respond to thermal changes. There was no tenderness from percussion. We opened into the pulp chamber and found a large pulp nodule almost filling it. We removed the nodule without any difficulty, and to our surprise all three of the canals were putrescent. I questioned him closely about the tooth; he remembered that it was sensitive for a while after it was filled, but after a few months it gave him no annoyance.

I mention these three cases to show what a variety of conditions may arise from this disease. First, there was almost a complete calcification of the pulp, causing neuralgia in different regions. Second, the complete calcification of the pulp in the pulp chamber, also extending into the canal and causing severe pain, which did not extend beyond the affected tooth. Third, a complete calcification in the pulp chamber, with putrescent canals, having caused no pain at any time. I could mention other cases, but these represent the extremes, and other cases would be modified conditions of these.—J. Q. BYRAM, in *Indiana Dental Journal*.

The Use of Tin-Foil in Vulcanite Work.

TREATMENT OF THE MODEL.

In vulcanite work, tin-foil, when properly used, produces such handsome results and saves so much time and labor over the file and scraper method of finishing, that those who have abandoned the old method for the newer and better cannot understand why others adhere to the former, unless for the want of a reliable mode of operation. The following plan is successful with the writer:

Polish the plaster model with a ball of cotton charged with powdered soapstone. This fills, or partially fills, all minute bubble holes or depressions. Then coat it with mucilage or gum tragacanth and, with a ball of cotton, at once press down and burnish on the palate of the model the center of a sheet of No. 6 tin-foil (such as used for filling teeth) and work the ball outward over the ridge and backward towards the heel of

the model until covered. The surplus foil may be cut away with a sharp knife and a drawing cut. Of course the foil will wrinkle and fold to a certain extent, but the wrinkles and folds can be almost entirely burnished away. This burnishing should be continued until a high polish is attained and the model has the appearance of a polished metal die. The gum tragacanth unites the foil to the plaster and makes burnishing possible.

The teeth are now to be mounted and the case waxed up. If plain teeth are used, the labial and buccal parts, with a small scraper or other suitable instrument, are carved and modeled in imitation of the natural gum, and the entire wax surface smoothed with a fine blow-pipe flame. Then the case is flaked in the lower half of the flask (the wax having been first chilled and the model soaked in cold water,) the plaster being allowed to reach only to the rim of the plate.

DIRECTIONS FOR STIPPLED GUMS.

If the stippled effect is desired, the strip of burnished foil is carved at the gum festoons with the point of a sharp lancet, removed, flattened, placed upon a piece of heavy foil (No. 30,) the pattern marked with an excavator point and cut out with shears. The straight edged of this is then slit with many little slits to prevent wrinkling when adjusted and burnished to place.

The strip is now warmed a trifle, adjusted to the gums, pressed to place with thumb and burnished with the cotton ball. The slits prevent wrinkling by overlapping. The stippling is then done by gentle tapping with a blunt excavator to indent but not pierce the foil, or by very light blows from a fine plugger point in the engine mallet. The ends need not be turned to be caught by the plaster, as the indentations suffice.

The surface of the plate next the tongue (linguo-palatal) is coated with the tin-foil with the aid of the cotton ball. The surplus edges are left free to be engaged by the plaster investment. No mucilage is used.

The two halves of the flask must be separated with care for the removal of the wax and packing of the rubber, or the thin foil will tear. Boil the flask several minutes in water until it is certain the wax therein is semi-fluid. It will then offer no resistance to the separation and the two halves will remain intact.

After the case is packed, if it is desired to close and separate the flask to ascertain if the proper quantity of rubber is present, the model is given a coating of liquid soap.

FINISHING THE PLATE.

Finishing is very simple. When the denture comes from the vul-

canizer, the heavy foil can easily be pulled off, but the thin must be removed by a bath of dilute nitric acid (about 1-5) after the adherent plaster has been scraped and washed away. The excess of rubber is filed off and the gum festoons, where needed, are shaped with chisels. The few bubble hole hillocks are broken away with a scraper or spoon excavator. Excepting where the chisel is used and the surplus rubber removed, no polishing is necessary; the case comes polished from the acid bath—beautifully polished.

Aside from the fact that the use of tin-foil saves time in furnishing, it affords better results: the palatal surface of the denture is polished; the soapstone powder in large measure prevents the formation of bubble hole lumps (the few that are formed probably are caused by bubble holes just beneath, but not opening upon, the surface of the plaster model that cannot be reached by the soapstone but which the rubber breaks into): the palatal portion of the plate can be made thinner than ordinarily is advisable, because there will be no fear of polishing a hole in the plate; the rubber surface is more dense, and therefore more hygienic, than is the surface polished with sand paper and pumice; and lastly, the air chamber and rugæ can be reproduced on the linguo-palatal side of the plate, thus presenting to the tongue a more agreeable surface than the clam shell concave of the average denture.—A. R. LAWSHE in *Items of Interest*.

Directions for Producing Clean Joints.

While grinding up, bevel the upper borders of the porcelain gums, and make them of even height, especially where the bicuspid block joins that of the canine. Do not allow your wax to creep over the gums any farther than this beveled border.

In investing the case in the lower half of the flask, let your plaster come exactly up to this border of porcelain, covering all of the wax and none of the porcelain. Before pouring the second half of the plaster investment, coat with some thick oil the inner surface of the upper ring of the flask. This is done that it may afterwards be easily removed, and to this end also, this inner surface should be made as smooth as possible, by polishing, it as you would polish a plate.

Having opened your flask and removed the wax, cover the backs of the front gum sections with a strip of tin foil, covering all above the pin heads. This is done that the blocks may afterwards be easily picked away, as otherwise the rubber may adhere tenaciously to their backs. At the same time, it is well to further cover the three joints each with a strip of several thicknesses of tin foil. Without some such precaution, the

rubber, which swells slightly in vulcanizing, would in many cases work its way back into the joint, especially with black rubber, and if the waste gates were insufficient.

Before packing the rubber, cut away the plaster of the investment, to about the depth of a line, along the porcelain border, and similarly along the edge of plaster around the cast in the other half of the flask. This allows for an extra thickness of rubber along the upper margin of the gums; an ordinary thickness being liable to be dragged out of shape while removing the blocks. This excess of rubber is cut away after vulcanization.

Having closed your flask, cool it, unscrew it, and then tap the upper ring until it comes away. If it has been thoroughly cooled, you need not fear that this releasing the rubber from pressure will allow it to spread the two halves of the case apart. The cold rubber will hold them together as an oyster its shell.

Now cut the plaster away from before the incisors and almost as far back as the molar joint. With a small flame heat the thus exposed blocks, and soon they will be warm enough for you to pick out the two front sections. Now cut away with a heated lancet, the rubber which has insinuated itself into the joints.

On replacing the blocks, it will be found that they will not return to their previous positions without some pressure, which must be maintained until they are reinvested with plaster. Besides, you need to push them a trifle farther in than the place you took them from, because they had been slightly spread by the expansion of the plaster investment and the pressure in closing the flask. To accomplish this, cut a deep groove in the plaster over the molars and around the back of the investment, and into this groove slip a broad rubber band, bringing it round in front of the incisors. This band, being thus stretched around the case, exerts a retracing force on the protruding blocks. Now place the flask in hot water, having first screwed it down to prevent separation of its halves by the expansion of the heated rubber. After a few minutes the rubber band will have drawn in the blocks, and you should open the flask again and examine the joints with a magnifying glass, when, if they are still slightly apart at what in an upper set would be their lower ends, remove the blocks once more and scrape a little plaster from behind the teeth then replace the blocks, band, etc., and heat in water as before.

This broad elastic band should not be left on during vulcanization, because it occupies a place against the gum surface which should be occupied by the unyielding plaster, and being itself yielding, it may allow the blocks to be spread out by the pressure of the expanding vulcanizing rubber. If any slight spreading occurs on removing the broad elastic

band, this may be remedied by replacing it by a narrow one, or by a band of twine twisted tight on a piece of match stick, leaving these in during vulcanization. In favorable cases, the twine and match stick will serve the purpose of both rubber bands.

Now pour fresh plaster to replace that cut away, and vulcanize as usual.

If, on finishing the plate, the joints are so that the finger nail will catch when drawn either way across them, they should be leveled by a narrow emery wheel, this abraided surface being polished with the rest of the plate.

If the joints show dark from other cause than vulcanite, place along each joint a twist of cotton saturated with nitric acid, leaving it there half an hour.

Unfortunately, this is not a lazy man's method. It requires some little time. But to him whose motto is "thoroughness," it is a boon in those cases where prominent gums or short upper lips necessitate the exposure of much artificial gum, making the dull and lifeless pink of vulcanite objectionable.—S. J. SPENSE, *Items of Interest*.

BRIEFS.

To Retain Color of Platinoid.—In some mouths platinoid discolours; this is obviated by flowing 14-carat gold solder over it.—*Dental Hints*.

Use Vinegar to Destroy Odor of Iodoform.—A teaspoonful of vinegar used on the hands after washing with soap and water will take away the smell of iodoform.—*Dental Hints*.

How to Remove Blood Stains.—When you have blood on your hands first wash them in pure water. Using soap at first is a mistake, as soapy water does not dissolve blood rapidly. Clear water and a nail-brush should come first, soap next.—*Dental Hints*.

Cementing Bands and Crowns.—Dry the tooth and paint with shellac varnish before applying the cement. This gives durable adhesion, and should the cement dissolve, the shellac will protect the tooth and prevent decay under the band.—W. G. Lange in *Dental Cosmos*.

Silk Test for Perfect Edges in Inlay Fillings.—The most expert operation in porcelain I ever saw or ever did had a slight edge above the tooth. My practice is to pass a piece of silk over the edge; if I find the silk cut I know the edge is not perfect.—Dr. Capon, *Items*.

Harm Done by Disk and Strip.—Many times great harm is done with the disk and strip, and I would advocate cutting the gold off at the cervical margin. Using the disk at the cervical margin on the sensitive dentin and peridental membrane will leave the tooth sensitive afterwards.—*J. N. Crouse, Dental Digest.*

To Remove Plaster from Vulcanite saturate a pellet of cotton with strong cider vinegar and rub surface coated with plaster and all trace will be removed. I have tried everything appearing in dental journals and that I could hear of, but all to no purpose, until the above proved most effectual.—*Welch's Magazine.*

Nitrate of Silver for Suppuration of the Antrum.—In old suppuration of the antrum Fein uses powdered nitrate of silver, which he applies with a blower, designed to eject it in a fine cloud and cover the whole surface with a thin layer. A slight burning sensation follows. The discharge diminishes and other symptoms improve.—*Pacific Med. Jour.*

The Use of Stay-Bands for Lower Plates.—Lower cases carrying the back teeth which have a tendency to slip back, in spite of retaining bands, can have *stay-bands* attached to them to prevent this. A thin piece of metal (as it does not require much strength, and need not be thick) may be passed between two convenient teeth, if space will permit.—*J. C. Cameron, Brit. Jour.*

The Essentials for a Successful Bridge.—Before suggesting a bridge to my patient, I always take models of the mouth, get the bite, and study the case, and if anything occurs which would contraindicate a bridge, I do not proceed further. The essential points to be observed for the well-being of a bridge are good roots for piers, good standing teeth for buttresses, and a free bite, and without these you may expect failure.

Pulp Capping.—A pulp cap must be a disinfectant; an antiseptic; an antiphlogistic, and a non-conductor of thermal changes. To secure the combination apply rubber-dam; remove all debris; saturate cavity with creosote and wipe dry; introduce iodoform, followed by copal-ether varnish a little thicker than cream. Cut asbestos paper to cover; press gently down and varnish over. Oxyphosphate of zinc over this.—*Dental Register.*

Buckling and Cracking in Swaging.—In swaging a full upper, you will have experienced at times much trouble by the plate buckling, especially in cases where the palate is deep. It may also show signs of cracking or tearing. In any case the plate should be removed from the

counter and any attempt to buckle should be corrected immediately by a few judicious blows of the mallet. Cracking or tearing should be soldered with fine solder to prevent it going further.—*C. Rippon, Jour. Brit. Assn.*

Running Plaster Casts.—If your impression material used is modelling compound, use a small quantity of machine or other convenient and inexpensive oil on the surface of the impression, and the separation will be perfect. If your impression material is plaster, and you wish to run a plaster model, mix a small quantity of common laundry bluing in the plaster for the cast, and the line of separation cannot be mistaken. The bluing in small quantities does not injure the model.—*J. R. Warren, Dental Hints.*

"Shoeing" or Tipping Porcelain Teeth.—Grind the tooth to thin or "feather edge" as usual; extend backing as far as possible, filing off gently toward the tooth. Place on model and wax up, extending the wax a few lines beyond occlusal end of tooth. After investment has hardened remove the wax and pack the groove left by removal of wax on end of tooth with non-cohesive gold foil. When soldered the tip will be perfect, the foil serving as scaffolding to carry the solder.—*E. P. Beadles in Dental Brief.*

Watt's Metal Best for Crown Dies.—Watt's metal is used to form the cusp button for two special reasons: First, it is harder and higher in fusing point, which precludes the probability of uniting the two by pouring one upon the other; and, second, because it is impossible to swage or conform to a desired shape a piece of gold or other soft metal between two like surfaces of even resistance without stretching very materially, the counterdie run of Mellotte's metal, or fusible alloy.—*H. J. Goslee, Review.*

An Enamel for Use in Re-adjusting Dental Plates to the Gums.—Soft pink rubber is dissolved in machine oil and suitably scented; a fine gum, such as shellac, is dissolved in spirits of wine, and plaster of Paris added together with a little carmine finally $1\frac{1}{2}$ parts of the former solution are mixed with one part of the latter, together with a little Condyl's fluid. The product, which is of the consistency of thick oil paint, may be re-heated and well stirred; it may be thinned by adding rectified spirit.—*Dental Record.*

Overheating During Soldering.—I have seen a few teeth backs sweated or melted, during the course of many years, from, careless use of the blow-bipe in soldering backs in confined positions, or from deflected flame. I never remember to have seen the pins spoiled. So-called over-

heating can, in my opinion, be avoided by slowly bringing the investment to a cherry red heat, and with a few jets of suitable blow-pipe flame flowing the solder where it is wanted.—*W. B. Pearsall*, in *J. B. D. Association*.

Cast Model with Fusible Metal when there is a great exactness of articulation required between the artificial and the natural teeth. It is advisable only to cast the teeth, as one of the drawbacks to fusible metal is its tendency to granulate if used in thick masses. Two or three pins should be stuck in the teeth so as to hold the fusible metal to the plaster, which can now be poured in to fill up the model. Casting a model in this way prevents any abrasion in letting your artificial teeth down to the bite.—*J. Cockburn*, in *Jour. Brit. D. Asso.*

Devitalization of Tooth Pulp.—When the pulp is exposed, fill the cavity with finely pulverized cocaine and wet the pledget of cotton you put in for pressure with vopocaine, which is a solution of cocaine in ether, and you will find the solution much more penetrating. In forcing the cocaine in the pulp, I use a tampon of unvulcanized rubber. I find it of great advantage over cotton, because it fills the cavity more perfectly around the edges, and you are enabled to get greater force, commencing with slight pressure and very rapidly increasing it.—*J. D. Patterson*, in *Western Dental Journal*.

Where Gutta-Percha Should Not be Used.—Gutta-percha, though often employed, is not indicated in the filling of deciduous molars, for it does not exclude moisture, it does not neutralize the septic conditions attending dental caries, does not resist the force of mastication, and in approximal cavities crushes down into the interdental space to cause absorption of the septum and, by spreading the teeth, deranges their symmetrical arrangement. It may answer a purpose in the buccal cavities or in the proximal cavities of the deciduous incisors.—*A. H. Thompson*, *Welch's Magazine*.

A Method of Obtaining a model of the Tooth and Cavity from which to make the matrix that I have sometimes followed, is as follows: Either wet the cavity or oil it, and then take an impression with red impression-material. Take that out and oil it thoroughly, and then work around the little protuberance the oxyphosphate of zinc in proper consistence, letting it harden, and you have an exact duplicate of the natural tooth in oxyphosphate. Into that little cavity, which is quite clearly defined, you can burnish your matrix of platinum, and do your baking without trying it in the mouth at all. You will not get so close a fit, however, as by actually burnishing in the tooth.—*S. G. Perry*, *Cosmos*.

Replacing a Crown Post.—Some times we have trouble in putting a post in a Richmond crown that has broken off. I put them back in a very simple way, yet a very satisfactory one. I take a thin carbondum disk and cut through the back of the tooth until I get where the post was, put my post in this slot, fasten it in with wax and invest in Browne's investment composition, turn a slow flame on it and drag out the investment, pack a few gold cylinders in the slot and flow my solder over it, the job is finished in less than twenty minutes, and is as good as when new.—*M. N. Mixon, in Dental World.*

Treatment of Putrescent Pulp.—Open nerve canals by Callahan's treatment with sulphuric acid. Neutralize the 50 per cent. solution of sulphuric acid, either with saturated solution of sulphuric acid, either with saturated solution of bi-carb. of soda. or preferably, with peroxide of soda. When canals are clean, fill with formaldehyde paste. For these root fillings mix the paste with a 10 per cent solution of formaldehyde (3 vols. of water to 1 vol. of formaldehyde), and fill the root-canals with this thin, creamy root filling, which is a perfect antiseptic filling.—*Dental Office and Laboratory.*

How to Melt Gold Scraps.—Our plan is *not* to melt the scraps on charcoal, but on a piece of an old crucible or a piece of slab, such as is used to bake artificial teeth on, which may readily be procured from any artificial tooth manufactory. Place the slab or piece of crucible in your asbestos holder, for fear the nugget might roll off when melted. As soon as it is melted take the face of a hammer and flatten the melted nugget. Done in this way the gold will rarely crack either in rolling or hammering, while if it be melted on charcoal it will almost invariably crack.—*Ed. Office and Laboratory.*

Some Medicaments which Age Affects.—There are a few preparations which age renders inert or markedly diminished in quality. Tincture of iodine, U. S. P., under careful handling deteriorates after two months, and should in consequence never be prepared in large quantities. Spirits of nitrous ether remain at a fair strength for three months only. Dilute hydrocyanic acid loses half its strength in six months. Among others which deteriorate might be mentioned syrup of wild cherry, syrup of althea, camphor water, fennel water, anis water, dilute nitro-hydrochloric acid, etc.—*Pacific Med. Jour.*

How to Apply Floss Silk to Wedged Teeth.—It is frequently found almost impossible to get the floss silk through by bringing it up from below. For a long time it has been my practice in these cases to take a very fine cambric needle, No. 9, draw the temper, bend it, and thread it with a fine silk, and to the silk attach the line or whatever is to

be used in wedging. This needle is passed between the teeth from above next the gum, and the line drawn through in this manner. Again, instead of using a line of large size, I generally use a small size, making it into a chain stitch.—*F. M. Smith, International.*

Why a Second Application of Arsenic for Devitalization of Tooth Pulp Should Not be Made.—A second application of arsenic is a great mistake. If the tissue within the pulp-chamber is found devitalized, there is no question concerning that within the root-canals. The sensitive point encountered at the apex is not vital pulp tissue, but is due to an inflamed, irritable condition of the corpuscles of the cementum, from too large an amount of the arsenic left too long in the tooth, and requires the application of dialyzed iron to neutralize the arsenic, followed by soothing anodynes.—*W. C. Barret in Dental Brief.*

Phosphate of Zinc for Setting Inlays.—Many objections have been raised to using phosphate of zinc for setting inlays, but I know of no such objections which are well founded. Properly used it accomplishes its purpose so well that I can see little necessity for seeking for a substitute. If the inlay fails, it is always owing to some fault in manipulation and not to any defect inherent in zinc phosphate cement. If the inlay fits as it should, the cement will no more dissolve out than under a gold filling, and with the lapse of time it becomes so hard that its removal is a matter of considerable difficulty.—*N. S. Jenkins, in Cosmos.*

A Hint on Investing Teeth.—I let my plaster investment come just to the edge of the wax around the posterior teeth, and to the necks of the anterior teeth. Then, after completing the investment, the teeth are drawn when the flask is opened and are securely held in the opposite side of the flask from that which the investment was begun. In drawing the teeth in this manner, none of them get out of place, or no broken investment to patch up. Then if the flask is brought thoroughly together before vulcanization, you need have no fear as to the success of the operation.—*E. H. Keith, in Ind. D. Jour.*

Contact Points Necessary for Fillings.—In my own practice, it has been my custom for years, by use of strips and disks, to make, so far as possible, ideal points of contact. Many times, on separating teeth that seemed to be perfectly sound, I have found, as we all have, little places where decalcification had begun, and after smoothing or polishing these surfaces correcting the form in proper manner, there has been no tendency toward recurrence of the trouble for many years after. This I believe to be the essential and all-important thing to be done in the care of children's teeth wherever possible.—*G. V. I. Brown, Welch's Magazine.*

A Good Root-Filling Material.—In using chloro-percha, a small amount of the fluid is placed in the cavity and then pumped into the canals with a fine broach. This also is not very satisfactory, as chloro-percha shrinks during the hardening process, and the canals are therefore not perfectly full. This shrinkage, however, can be almost, if not wholly overcome by packing cotton fibre into the chloro-percha before it has hardened, or a gutta-percha cone may be used instead of the cotton. By the combination of chloro-percha and gutta-percha, or chloro-percha and cotton, you obtain an almost ideal root canal filling.—*J. W. Hagey in Dominion Journal.*

A Simple and Very Effective Method of Regulating Teeth.—The materials required are very simple,—namely, heavy linen or carpet thread of various sizes. A size is selected which will with difficulty pass between the teeth to be wedged; grasping the string at both ends, it is pulled down between the teeth until it passes the shoulders. The ends are then brought together and a knot tied at the side, thus pulling the cord against the shoulders and preventing it slipping down on the gum and causing irritation. I find the method is effective, and obviates a great deal of soreness, patients not complaining at all of the wedge.—*K. C. Smith, International.*

Root-Canal Filling; Weld's Chemico-Metallic Method.—One of the metallic broaches, composed principally of zinc (97 per cent.,) is to be dipped into the modified nitro-hydrochloric acid, probably about one-fifth of a drop adhering; sufficient to destroy all the germs and coagulate the dead or semi-dead matter in the canal. The broach thus charged is immediately inserted in the canal, a slight nick having been previously made at a point corresponding with the depth of the canal. A slight bend or twist breaks off the point, leaving it in the canal, obliterating the space, while the concurrent chemical action acts as a powerful germicide.—*L. N. Seymour, Indiana Den. Journal.*

How to Keep a Partial Lower Combination Plate from Crawling when being Swaged.—Take a partial lower combination. The plate is cut to pattern and swaged into position in the ordinary way. In these cases much difficulty is often experienced by the plate moving away from the position it is to occupy. The method I adopt to overcome this difficulty is as follows: having roughly swaged the plate into position, I drill a hole through the plate, and a considerable depth into the die, then drive in an ordinary cut tack, cut off the head, thus you have, strictly speaking, the plate nailed to the die. It is the most satisfactory method I know of easily overcoming what would otherwise be a most trying task. I would go still further if necessary, and drive two or

three nails into the plate. The holes are easily filled up by forcing in a piece of wire and soldering with fine solder.—*C. Rippon, Jour. Brit. Dsso.*

China Silk as an Amalgam Squeezer.—Why do you continue to use an old dirty piece of chamois to squeeze the mercury out of amalgam? For ten cents you can buy enough china silk to last three months. Cut this up into small squares about two inches in size and put them in some little corner of the drawer. Use one of these to squeeze the amalgam, twisting it with the fingers, when through throw it away. It is just as effectual, cleaner, and your patient will be pleased to see it instead of being disgusted with seeing that old dirty looking leather rag. Besides its cleanliness the piece of silk after being used and thrown into the waste basket or cuspidor will not carry mercury into your cabinet and scatter it around as does the old smutty chamois.—*S. H. McAfee, Dental World.*

Posts and Bands for Building Up Molars.—I have used the method of screwing on metal posts in building up badly decayed molars for eight or nine years and have had many failures for I had weakened the tooth so much by reaming it out to fit in these metal posts that from mastication the tooth split in a way that was irretrievable,—i.e., the root split vertically. A dead tooth must always be a weaker tooth than a live one, and it grows weaker as the years go by.

Now, in addition to the post, I put a band or ferrule around the neck of the tooth and have a good operation. I believe in this method in some cases. I have restored old roots that were almost complete wrecks, built up a little amalgam on them, and they have done service for years: but, other things being equal, I would prefer a good gold crown.—*H. D. Hatch, Cosmos.*

Extra Pliable Eighteen Carat Gold Plate.—The following formula gives a very pliable gold plate, especially useful for an upper plate where the vault of the arch is usually high, the rugæ prominent, or where, on any account, a soft, pliable tough plate is required. The metals must be chemically pure. They may be obtained from refiners of photographic waste.

R. Pure gold.....	20 dwt.
Pure silver.....	6 "
Pure copper.....	16 grains.

Melt these together with plenty of borax as a flux. This gives a plate sufficiently ductile to be, with proper care, driven into hollows or swaged over sharp ridges without breaking. This is due to the percentage of copper being less than is usual in ordinary eighteen carat plate

met with commercially. The addition of copper hardens the gold and makes it less ductile.—*N. H. Keyser, in Dental Brief.*

Rosin Ether Varnish for Cavity Lining—Do we not get a more lasting filling of amalgam in a tooth, by first varnishing the cavity with a thin solution of rosin in ether?

My method is to isolate tooth by rubber dam; remove all decay; sterilize cavity by the drug best indicated for case at hand; dry cavity thoroughly with alcohol and hot air; varnish cavity with thin solution of rosin in ether; carefully remove all of varnish from periphery of cavity; pack in amalgam in the usual way.

It seems to me in this way we get a more thoroughly incorporated filling.

It is pretty generally allowed by scientists that ether has great penetrating powers; especially is this true in the canaliculi of the tooth structure. By using the rosin and ether, the canaliculi become sealed. The amalgam is now pressed in, and a very intimate relation is established between the tooth and filling which would not take place if the varnish were not used.—*G. W. Soule, in Items.*

The Use of Binding Wire in Application of Rubber Dam.—

It is comparatively easy to push the gum away between the teeth to almost any extent, but this is not the case with that covering the external and internal alveolar plates. The consequence of this is that the gum margin assumes an irregular line, and the ligature—silk or such like—which like the rubber assumes, when taut, a straight line—fails to follow this.

I have successfully overcome this by using binding wire, twisting it up with pliers instead of tying. This can be easily pushed into position with a blunt instrument, carrying the rubber before it, and will maintain its shape in a most satisfactory manner.

I have used also a thicker binding wire in ordinary distal cavities when they happened to be situated in the last tooth in the jaw, the free ends left after twisting being bent and utilized to hold the rubber dam away from the back of the tooth.—*W. M. Gabriel, Jour. Brit. D. Assn.*

How to Test an Artificial Tooth for Color.—The metal packings of porcelain facings or veneers nearly always change the shade. Gold adds a light straw tint, platinum a bluish tint. The extent of this depends on the thickness of the veneer. In making a perfect match in color (as every dentist ought to) it is almost impossible to do so without trying on the backing to see what difference in shade it makes. A convenient way of doing this where a number of facings are to be tried in the mouth to facilitate selection, is to make a small stick of wax, flattened

on one end. On one side of this, warm and press one or two layers of gold foil; on the other side a piece of platinum foil (or tin foil will have about same effect.) The pins of the facing can readily be stuck through this and the facing be brought in contact with the foil for trial in the mouth showing the shade much more conveniently than backing each facing with gold or platinum plate, or guessing at it, as is too often the case.—*M. C. McAfee, Dental World.*

Fill Spaces Between Crowns and Dummies with Gold.—If any wide spaces between the dummies or the crowns exist, these spaces should be filled with small pieces of 18 karat wire, as the solder will not bridge a wide space, besides, if the workman *force the solder to bridge* the space, the case would not be as strong if filled with solder as if filled with small pieces of wire; then again, when the solder cools and contracts, it is apt to draw the dummy out of the position which it held when it was assembled in the mouth with hard wax. Before soldering, the invested bridge should be permitted to heat up slowly on a Bunsen burner, and not removed to the soldering block for soldering until the investment is a glowing red heat.

Solid Cast Gold Cusps for Crowns.—Take a piece of cuttlefish bone, such as sold for use in bird cages, and dress the soft side flat with a coarse file,—a rubber file will do it nicely,—and press the piece you wish to duplicate into it to the required depth. Another piece of cuttlefish bone, filed flat, is placed over it, and a hole is gouged out in the first piece with a channel to the mold thus formed. The two pieces are then wired together, and scrap gold placed in the second hole is melted with the blow-pipe; and when at a proper heat the mold is filled and the cast is made.

With the excellent steel dies that we now have it is the work of but a few minutes to make a cast cusp by this method, and even a natural tooth would make a mold that would be desirable, as it would duplicate exactly every cusp and fissure.

From this suggestion it is but a step, and only a matter of detail, to cast the cusps for several teeth for a bridge, using a dummy of type metal to make the mold in the cuttlefish bone.—*W. H. Mitchell, D.D.S., Cosmos.*

Investing.—When the parts are thus assembled, and the hard wax made brittle by iced water, the buttress crowns, as well as the dummies, may sometimes be removed from the mouth, and when removed, invested for soldering. In this way much of the trouble is saved, but if the assembled parts do not yield readily it is best then to take an impression with plaster, which will bring away all the parts in the impression. When running the model to this impression, mix fine sea sand with the

plaster, and before pouring this, put a piece of iron wire in each of the gold crowns of the buttress teeth, so as to strengthen these, otherwise they might be broken off from the sand and plaster model. When this model gets hard, it is removed from the impression by cutting this carefully away piecemeal. The model is then cut down to its smallest proportions, when it is permitted to soak in water. More sand and plaster are then mixed with water, when the prepared model, with the assembled parts of the bridge, are invested ready for soldering. When the investment has hardened, it is trimmed so that the flame of the gas blow-pipe may readily reach all the parts; then all the hard wax is scraped away and the parts left perfectly clean.

EDITOR'S NOTES.

Pressure Anesthesia.

THE following appears in the *Indiana Dental Journal*, Nov., '99:

"OVER a year ago, in the October number of the *INDIANA DENTAL JOURNAL*, we printed a clipping from the *Dominion Dental Journal*, detailing a method of removing pulps under pressure anesthesia. The article ran as follows:

Dry the cavity out after having removed as much of the debris as practicable without giving a great deal of pain; then take a piece of soft spunk, dip it in alcohol (absolute alcohol is the best), and then dip the alcohol-laden spunk in crystals of muriate of cocain, place it in the bottom of the cavity and press a piece of unvulcanized rubber against it quite hard for from one to three minutes; then take out and remove the remaining layers of decay till you thoroughly expose the pulp, and repeat the operation, when you will find the pulp has lost all sense of feeling, and you can remove it without the slightest pain.

A month or two later we editorially recommended the use of chloroform instead of alcohol, as the former contained anesthetic qualities quickly appreciated by the pulp.

Items of Interest finally found out about the method in May and June, 1899, eight months later and the October (1899) issue of the *Stomatologist* has now discovered it.

MORAL: The *INDIANA DENTAL JOURNAL* will be sent to any

one in the United States for \$1.00 per year. Don't be a clam. Now is the time to subscribe."

Now, one would think that these were the only dental journals in America that published this item. We are not given to boasting, but bless you, a year ago last September, while Editor Hunt was wrapt in the arms of Morpheus, dreaming of "pressure anesthesia," "pomes," and other pleasantries, the OHIO JOURNAL reprinted this article from the *Dominion* and gave it to its readers *a whole month* before it appeared in the *Indiana Dental Journal*. (See OHIO JOURNAL, Sept., '98, page 449.)

MORAL: If you want to keep fully abreast of the times and keep posted on all the practical suggestions given to the profession you should include the OHIO DENTAL JOURNAL in your list for 1900.

A Practical Journal.

WHILE on the subject of dental journals and practical suggestions we will ask our readers to compare this number of the OHIO JOURNAL with other dental journals, after carefully perusing it, to convince them that the OHIO JOURNAL is alive with practical suggestions and gives its readers, in concise and readable shape, all the best practical thoughts given to the dental world from all sources. You cannot afford to be without the OHIO JOURNAL. Every number is worth more than the price of a year's subscription to you.

SOCIETIES.

National School of Dental Technics.

THE meeting of the National School of Dental Technics is to be held in Philadelphia at the Continental Hotel, at 11 a. m., Wednesday, December 27th, and continuing three days.

Every teacher in the profession should be present. A most excellent program will be presented, consisting of a lecture and demonstration by Prof. J. Liberty Todd, and papers by Drs. Faneuil D. Weisse, C. S. Case, D. A. Gritman, A. E. Webster,

W. H. Whitslar, M. H. Cryer, H. J. Goslee, Otto Arnold, I. N. Broomell, G. V. Black, A. H. Thompson, James Truman, and others.
G. H. WILSON, *Chairman Com.*

Toledo Dental Society.

At the last meeting of this society the following officers were elected for the ensuing year: H. C. Kuebler, President; J. Frank Cook, Vice President; L. T. Canfield, Sec. and Treas.

The society meets the second Friday in each month.

OUR AFTERMATH.

THE DENTAL WORLD is a new monthly dental journal published under the auspices of the Georgia State Dental Society and edited by Dr. H. H. Johnson, Macon, Ga. Vol. I, No. 1 begins with the Oct. issue. The first number contains 22 pages of interesting material. It is neat in appearance and make up, and we predict a good future for the journal under the editorship of such a competent man as Dr. Johnson.

UNDER \$45,000 BONDS.—On the thirtieth day of September eight dentists of Boston were sued by the International Tooth Crown Co. for sums varying from five to seven thousand dollars. Real estate was attached and marshals were placed in offices. These facts were telegraphed to Dr. Crouse who immediately secured able Boston counsel, and by a bond for \$45,000, furnished by American Surety Co., secured release of the attachments and removal of keepers. This was followed by the arrival of Mr. Offield who has been attorney of the Protective Association for ten years, to personally take charge of the cases, relieving us of all trouble and expense. The matter now rests pending the action of the courts. Imagine your predicament in such a case, if you were not a member of the Association. We feel that we should ask each non member whether he can afford to take his chances unaided any longer, as no one can tell upon whom the blow will next fall. Did you read the circular sent out five weeks ago by the Association? If not, we recommend you to do so at once.

The Association will defend all its members. Non-members will *not* be defended. It is a duty you owe yourself to join the Protective Association at once. The doors will be closed December 1st.

JOHN F. DOWSLEY,
F. M. HEMEFWAT,
THOMAS FILLEBROWN.

WALDO E. BOARDMAN,
L. D. SHEPHARD.

Boston, Mass., November 11th.

